

# ROADMAP TO SUCCESS: AN INTERNATIONAL CONGESTION MANAGEMENT APPROACH TO THE EUROPEAN UNION TRAFFIC PROBLEM

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## 1. INTRODUCTION

This paper elucidates the traffic congestion problem in the European Union ("EU") and proposes an integrated solution termed "congestion management." Moreover, it suggests that the only way congestion management will succeed is through international cooperation. The best body for organizing this cooperation and ensuring the success of congestion management is the EU. Section 2 of this paper defines the traffic congestion problem, its rapid increase, and the high costs associated with congestion. Section 3 rejects the traditional solution of increasing road infrastructure and instead proposes and defines congestion management with both abstract words and concrete examples. In Section 4, I explain the drawbacks of maintaining multiple national plans and the benefits of fashioning a coordinated international approach. Section 5 lists my proposals for the role the EU should play in road pricing, technological solutions, and other aspects of congestion management. Section 6 concludes the paper.

## 2. DEFINING THE PROBLEM AND THE COSTS OF INCREASED TRAFFIC CONGESTION

As economies grow, as an increasing number of people enter the workforce with jobs that have international ramifications, as people move from the centers of cities to the suburbs, as commercial zones are increasingly located further away from residential zones, and as more people come to rely on their automobiles,

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traffic congestion explodes. Throughout the last two decades, travel by car has increased exponentially. Estimates of future growth are grim in light of the inadequate road structure that currently exists. Traffic congestion affects all countries in the EU and has large trans-national effects as well. Considering the increasingly international economic structure, experts predict increased international traffic will further exacerbate an already precarious situation where the costs are numerous and extremely high. The external costs of congestion include time wastage, pollution costs, accident costs, and decreased competitiveness. These costs escalate in tandem with the congestion problem and will continue to do so for the foreseeable future.

### 2.1. *Scope of the Road Congestion Problem*

Traffic congestion is a phenomenon that is difficult to define.<sup>1</sup> One EU Commission defines it as "a recurring phenomenon of varying duration caused by an imbalance between supply and demand in infrastructure capacity."<sup>2</sup> Congestion spares no European country and the phenomenon affects large cities as well as small towns.<sup>3</sup> Generally, congestion is not confined to commuter routes or large cities.<sup>4</sup> While it is true that urban, urban-suburban, and inter-urban traffic vary in amount and effect,<sup>5</sup> current trends in economic development, leisure travel, and interna-

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<sup>1</sup> See EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT ("ECMT"), EUROPEAN TRANSPORT TRENDS AND INFRASTRUCTURAL NEEDS 214 (1995) [hereinafter EUROPEAN TRANSPORT]. The Transport Ministers primarily attribute this difficulty to variations in traffic over time and differences in the perceptions of discomforts caused.

<sup>2</sup> DIRECTORATE-GENERAL FOR TRANSPORT, COMMISSION OF THE EUROPEAN COMMUNITIES, TRANS-EUROPEAN NETWORKS: TOWARDS A MASTER PLAN FOR THE ROAD NETWORK AND ROAD TRAFFIC 73 (1993) [hereinafter TRANS-EUROPEAN NETWORKS].

<sup>3</sup> See *id.* at 19.

<sup>4</sup> Traffic congestion affects work and non-work trips, movement of people, and the flow of goods. In inter-city corridors, in particular, traffic is disrupted by accidents, maintenance, detours, and tourists. See ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT ("OECD"), CONGESTION CONTROL AND DEMAND MANAGEMENT 9 (1994) [hereinafter CONGESTION CONTROL].

<sup>5</sup> Urban traffic congestion is recurrent and persistent. Suburban traffic congestion is limited to certain hours of the day, e.g. rush hour, but is less predictable than urban traffic. Inter-urban traffic congestion primarily involves bottlenecks and large jams across popular holiday routes. See EUROPEAN TRANSPORT, *supra* note 1, at 214.

tional policy are such that international demand will continue to grow.<sup>6</sup> In 1986, the European Conference of Ministers of Transport ("ECMT") first commissioned a study which warned of increasing bottlenecks and gridlock and noted that by 1984, "traffic growth [had] accelerated in all the countries concerned, bringing rapidly spreading congestion, which [was] no longer limited to certain links in the network."<sup>7</sup>

Travel by automobile enjoys a great deal of popularity. To a large extent, cars have greatly improved our economy and our lives in general.<sup>8</sup> Roads are used for 91% of the movement of persons in Europe and 72% of the movement of goods.<sup>9</sup> For medium or long-distance travel in Europe, 75% is done by car, 14% by rail, 6% by coach, and 5% by air.<sup>10</sup> Roads offer people the advantage of personal transport and best suit the requirements of the current European market economy for goods.<sup>11</sup> Therefore, planners and politicians fight not only custom, but also emotion, when they offer solutions aimed at alleviating congestion. For most trips, cars are the cheapest, most flexible, and most pleasant form of transportation.<sup>12</sup> Cars "are fundamental to the Americans' conception of mobility and personal autonomy,"<sup>13</sup> and it is not unreasonable to say that Europeans also value the freedom of travel by private automobile. Consider this statement by Yvonne Pepper, an individual with a one-hour commute to Amsterdam for work each morning: "I love the traffic jam. There's happy music on the radio, and I use the time to take care of my makeup and browse a bit in the morning paper."<sup>14</sup>

Not only have cars enjoyed past popularity, their popularity is currently expanding exponentially. There are numerous measures

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<sup>6</sup> See *id.* at 237.

<sup>7</sup> *Id.* at 23.

<sup>8</sup> See DOUGLAS A. HART, STRATEGIC PLANNING IN LONDON 27 (1976) ("The motor car . . . is not a problem when it is moving; it is a problem when it stops.") (quoting a speech made in 1963 by Rt. Hon. Ernest Marples, British Conservative Minister of Transport).

<sup>9</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 11.

<sup>10</sup> See *id.*

<sup>11</sup> See *id.* at 13.

<sup>12</sup> See William Underhill, *Europe vs. the Car*, NEWSWEEK, Aug. 25, 1997, at 34.

<sup>13</sup> Charles Komanoff, *Pollution Taxes for Roadway Transportation*, 12 PACE ENVTL. L. REV. 121, 123 (1994).

<sup>14</sup> Underhill, *supra* note 12, at 35.

for ascertaining the extent of the growth of traffic congestion and trends for determining future growth across Europe. According to one study, 5,000 out of 54,000 total kilometers of roadway are congested at any given time, with annual costs of 4 billion European Currency Units ("ECU")<sup>15</sup> in 1990, and these costs may reach ECU 14 billion by 2010.<sup>16</sup> Since 1971, travel by car has increased 120%, resulting in the current situation where 75% of all travel is by car.<sup>17</sup> Average speeds in urban areas decreased from 32 kilometers per hour ("km/h") in 1990 to 28 km/h in 1992, 26 km/h in 1994, and are estimated to become as low as 15 km/h by 2010.<sup>18</sup> Annual increases during the 1980's in kilometers traveled by vehicle ranged from 6% in Greece to 16.4% in Portugal.<sup>19</sup> In a favorable economy, road transport is likely to almost double over the next twenty years, leading to a 35% growth in the number of cars, three to five times the number of current bottlenecks, and subjecting approximately 18% to 30% of Europe's major roads to severe congestion.<sup>20</sup> The average EU car ownership annual growth rate is 4%, and some experts estimate that the EU could reach 0.6 cars per capita within the next few years.<sup>21</sup> Many countries report an expected increase in traffic demand of over 50% by 2005,<sup>22</sup> with a corresponding increase in road supply of only 6%.<sup>23</sup> Without any changes to current policy, such increased traffic demand could lead to increases in delays of 400% or more.<sup>24</sup>

Experts offer many reasons to explain the current growth and also offer projections for future traffic growth. "[I]ncreased mobility [goes] hand in hand with economic growth."<sup>25</sup> In addition,

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<sup>15</sup> The ECU is the EU's standard monetary unit.

<sup>16</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 9.

<sup>17</sup> See Neil Kinnock, Kinnock Speech at Public Transport Conference (Apr. 23, 1996), *available in* LEXIS, The Reuter European Community Report.

<sup>18</sup> See *id.*

<sup>19</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 19. The United Kingdom, for example, had an 11.3% growth rate.

<sup>20</sup> See *id.* at 23-24.

<sup>21</sup> See CONGESTION CONTROL, *supra* note 4, at 117.

<sup>22</sup> See *id.* at 15.

<sup>23</sup> See *id.*

<sup>24</sup> See *id.* at 13.

<sup>25</sup> TRANS-EUROPEAN NETWORKS, *supra* note 2, at 1. This is an effect that was recognized very early in the rise of the automobile in England. See SIR JOHN ELLIOT, LONDON TRANSPORT IN 1958 7 (1959) ("Transport can enable a city to thrive and prosper, [but] traffic can increase because of prosperity to such an extent that the streets become choked and the city stagnates."). One

more older people and women are driving.<sup>26</sup> Other factors affecting traffic growth include the following: (1) the spatial diffusion of human habitat; (2) increases in personal leisure travel; (3) the spatial redistribution of production and distribution; and (4) huge underestimates of traffic growth.<sup>27</sup> In particular, growth in personal car trips for leisure and tourism have increased much more rapidly than would be estimated by the corresponding growth in the European Gross Domestic Product ("GDP").<sup>28</sup> The European Commission has attributed the growth of traffic congestion to reasons such as the following: (1) elasticity of transport vis-à-vis economic growth; (2) stable energy costs; (3) rise in the number of vehicles on the road; (4) low-level of public sector investment in infrastructure; (5) absence of truly competitive means of transport; (6) failures of town planning; and (7) increases in transport demand.<sup>29</sup> Demand increases are due to (1) rises in tourism; (2) greater length of the average journey; (3) a shift towards rapid high-service transport; (4) new methods of production and distribution of goods; and (5) failures to internalize costs.<sup>30</sup> These factors, taken collectively, present major obstacles for the EU. As Neil Kinnock, the EU's Head Minister of Transport stated, "[T]he economic costs and the danger potential of such conditions . . . squash [] the meaning out of 'mobility' or 'freedom of movement.'" <sup>31</sup> Europe's traffic problems are clearly tremendous and their causes are varied and numerous.

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startling example of the link between prosperity and traffic growth is in the Far East, where economic growth has spurred a 20% per year increase in congestion, compared to a 5% per year growth in traffic in the rest of the developed world. See Neil Thapar, *There's Jam in Those Jams*, MAIL ON SUNDAY (London), June 23, 1996, at 11.

<sup>26</sup> See CONGESTION CONTROL, *supra* note 4, at 118. Every 1% shift in the female population from non-driver to driver leads to almost a 10 billion mile increase in miles traveled per year in the United States. See *id.*

Other small changes can have profound impacts upon traffic. Current wave and chaos theories suggest that small waves, curves, and braking lead to most traffic problems. See John Harlow, *Chaos Theory Offers a Route out of Our Clogged Roads*, SUNDAY TIMES (London), Aug. 7, 1994, at 7.

<sup>27</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 31.

<sup>28</sup> See *id.* at 42. Seventy-five percent of all international trips are for leisure. See *id.* As many as 50 million travelers per year arrive in France, Italy, and Spain, and 10 to 20 million arrive in the United Kingdom, Portugal, Switzerland, and Greece annually. See *id.* (citing OECD statistics).

<sup>29</sup> See Trans-EUROPEAN NETWORKS, *supra* note 2, at 21.

<sup>30</sup> See *id.*

<sup>31</sup> Kinnock, *supra* note 17.

## 2.2. *Rise of International Traffic in Europe*

One area of concern for the EU is the growth in international traffic and the increasingly international effects created by a rise in traffic congestion. International traffic is the most dynamic traffic component.<sup>32</sup> "[T]he proportion of international traffic on some links is already quite large[,] it is by no means negligible[,] and [it is] continuing to increase on national networks as a whole."<sup>33</sup> International traffic always increases at a greater pace than national traffic;<sup>34</sup> it may increase by a multiple of seven to eight in some countries,<sup>35</sup> while domestic traffic may increase only one percent.<sup>36</sup> These huge estimates result largely from lifestyle changes and frontiers being dismantled, which will likely stimulate economies and implicate traffic growth. The growth has been attributed to several factors including the following: (1) more money in booming economies leading to more cars; (2) the opening of Southern Europe to the European Economic Community with Spain and Portugal joining; (3) the opening of Eastern Europe with the fall of communist dictatorships; and (4) an increasingly global approach to trade.<sup>37</sup> Growing demands in road freight transport<sup>38</sup> promote international traffic since freight transport serves as "the backbone of our free-market economy."<sup>39</sup> As companies become more internationally focused, especially in light of the push towards an open market in the EU, they will inevitably conflict with an aging, under-planned, and inadequate infrastructure.

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<sup>32</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 9. Annual international road traffic increased by more than 12% during the second half of the 1980s. See *id.* at 38.

<sup>33</sup> *Id.* at 13.

<sup>34</sup> See *id.* at 34.

<sup>35</sup> See *id.* at 10. Percentages of total international traffic range from the low-end of 20% or less in Italy, Spain, the United Kingdom, Germany, and Greece to the high-end in small seaboard countries, such as 56.3% in The Netherlands and 61.2% in Belgium. See *id.* at 38.

<sup>36</sup> See *id.* at 10.

<sup>37</sup> See *id.* at 26.

<sup>38</sup> Freight transport has increased by 50% in the EU since 1974. See CONGESTION CONTROL, *supra* note 4, at 118.

<sup>39</sup> *Id.*

### 2.3. *Economic and Social Costs of Increased Traffic Congestion*

The costs of traffic congestion in terms of wasted time and fuel consumption are quite high.<sup>40</sup> Not only do motor vehicles play a central role in economic activity as the primary source of transportation, but they also are a major source of dis-benefits such as pollution (air and noise), accidents, and congestion.<sup>41</sup> Time wastage costs<sup>42</sup> in fifty urban areas in the United States, calculated by the difference between actual journey time and the maximum possible journey time in free-flowing traffic, were estimated<sup>43</sup> at \$780 million in 1989 (including additional fuel costs due to lower speeds) and \$700 million in 1988.<sup>44</sup> The Environment Green Book of the Commission of the European Communities (1992) reported that congestion costs in the United Kingdom ranged from 10 to 15 billion pounds (ECU 12.5 to 19 billion) per year.<sup>45</sup> These time wastage costs are far from trivial; in the United States 1.3% of the Gross National Product ("GNP") is attributable to time wastage costs, in France they constitute 2.1% of the GNP, and in the United Kingdom they are 3.2% of the GNP.<sup>46</sup> Furthermore, the costs are not simply due to wasted time. Gridlock has other deleterious effects such as decreased quality of life, a diminished environment, and decreased industrial

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<sup>40</sup> See Kenneth Button, *Overview of Internalising the Social Costs of Transport*, in INTERNALISING THE SOCIAL COSTS OF TRANSPORT 7, 18 (1994) [hereinafter INTERNALISING]; see also Thapar, *supra* note 25 (noting that billions of pounds are lost each year due to snarl-ups and delays).

<sup>41</sup> See Komanoff, *supra* note 13, at 123.

<sup>42</sup> "Traffic congestion steals time and equanimity from drivers, passengers and from non-motorists caught in gridlock." *Id.* at 124-25.

<sup>43</sup> Obviously, none of the costs discussed in this paper can actually be valued with an exact figure. Traffic has local effects (noise and vibration), trans-boundary effects (acid rain), and global effects (greenhouse gases). See Button, *supra* note 40, at 15. The OECD identifies four valuation methods. First, "precedents" looks at legal judgments and payments to workers for working in congested or environmentally-poor conditions. Second, "averting behavior" assesses the costs of insulating or altering behaviors. Third, "revealed preference" examines actual trade-offs made for environmental reasons in a secondary market, such as housing. Finally, "stated preference" or "contingency valuation" investigates market actors' preferences by conducting research through the use of hypotheticals. See *id.* at 17-18. See generally Émile Quinet, *The Social Costs of Transport: Evaluation and Links with Internalisation Policies*, in INTERNALISING, *supra* note 40, at 31.

<sup>44</sup> See Quinet, *supra* note 43, at 52.

<sup>45</sup> See *id.* at 53.

<sup>46</sup> See *id.*

competitiveness.<sup>47</sup> In the United States, costs to society—including accidents, injuries, and loss of life—and to the environment are said to run upwards of several hundred billion dollars annually, and could be as great as \$700 billion, or one-eighth of the GDP of the United States.<sup>48</sup>

### 2.3.1. *The External Nature of the Traffic-Related Costs*

Most costs associated with traffic are external.<sup>49</sup> Externalities are the costs or benefits associated with a transaction which are usually not accounted for by the parties to the transaction because they fall on third parties.<sup>50</sup> There are very few externalized *benefits* of transport, because market actors generally have incentives to internalize the benefits associated with transport, while they lack similar incentives to internalize its costs.<sup>51</sup> External costs and benefits are often ignored when prices are set in a market. In the transport industry, in particular, governments often compound the problem by implementing policies which discourage efficient functioning of the transport market.<sup>52</sup> Recent trends in both political and economic realms preach the elimination of externalities, accompanied by internalization of most, if not all, costs associated with a transaction,<sup>53</sup> including those costs associated with transportation interactions.<sup>54</sup>

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<sup>47</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 1-2.

Transportation is important for the efficient delivery of many economic goods and services, and it is also an important economic activity in and of itself. See ECMT, in INTERNALISING, *supra* note 40, at 3. High costs could negatively impact upon the motor vehicle industry which accounts, directly or indirectly, for one of every ten jobs in the European Community. See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 2.

<sup>48</sup> See Komanoff, *supra* note 13, at 125. A majority of these costs are not internalized. Komanoff argues for efficiency and measures to force travelers to pay. See *id.* at 125-26; see also *infra* Section 2.3.

<sup>49</sup> For a discussion of the useful terms, policy, and concepts of externalities, see Button, *supra* note 40, at 8-13.

<sup>50</sup> See RYAN C. AMACHER & HOLLEY H. ULBRICH, PRINCIPLES OF ECONOMICS glossary at 5 (5th ed. 1992); *id.* at 10.

<sup>51</sup> An example of an external benefit would be if a market actor watched traffic in order to view sports cars, from which act he derived some intangible benefit such as joy or awe, but derived no real monetary benefit. See Button, *supra* note 40, at 10.

<sup>52</sup> See ECMT, *supra* note 47, at 3.

<sup>53</sup> Internalization requires that all parties affected by a transaction consider all benefits and costs associated with the transaction when bargaining over the fair price. See Button, *supra* note 40, at 13. Though it would foster an efficient



In the transport context, the externalities of traffic congestion pose the greatest costs for other users of the same mode of transportation. Even though this understanding implies that costs are somewhat internalised by motorists as a group, the marginal costs created by each additional motorist who enters a congested motorway are “in principle” externalized, because the individual motorist does not bear all the costs of the additional congestion.<sup>55</sup>

### 2.3.2. *Types of Costs Associated with Traffic Congestion*

There are many types of internal and external costs associated with motor vehicles. Out-of-pocket costs for gas and insurance—estimated in 1990 to be at about \$3,600 per car per year in the United States—are internalized.<sup>56</sup> American experts value “taxpayer costs” at \$20 to \$30 billion dollars; these amounts are derived from government spending figures for road-building and maintenance.<sup>57</sup> “Social costs,” borne by neither drivers nor the government, total \$726 billion;<sup>58</sup> \$168 billion of these costs are congestion-related,<sup>59</sup> of which \$25 billion is borne by the public.<sup>60</sup> Other social costs include accidents and casualties (\$319 billion dollars per year in the United States), pollution and noise (\$94 bil-

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allocation of resources, strict internalization is too harsh because parties would be forced to bargain constantly. Therefore, those who espouse government efforts to force internalization often wish to achieve only quasi-optimal levels, and thus aim for “quasi-internalization” through the use of Pigouvian taxes and subsidies. See generally A. C. PIGOU, *THE ECONOMICS OF WELFARE* (1920). By the imposition of such taxes and subsidies, the government attempts to induce economically optimal behavior. See Button, *supra* note 40, at 14. Coase wrote of the assumptions required to reach the highest levels of internalization and optimality. See generally Robert H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

<sup>54</sup> The “[r]apid growth in the volume and complexity of transportation services in recent years . . . has significantly heightened political interest in the problem of transport externalities.” ECMT, *supra* note 47, at 3.

<sup>55</sup> See Per Kågeson, *Effects of Internalisation on Transport Demand and Modal Split*, in INTERNALISING, *supra* note 40, at 77, 77-78.

<sup>56</sup> See Komanoff, *supra* note 13, at 126-27.

<sup>57</sup> See *id.* at 127.

<sup>58</sup> These data are contained in Table 1 of Komanoff’s article. See *id.* at 128, tbl.1.

<sup>59</sup> Congestion-related costs represent motorists’ lost time as well as higher shipping costs. See *id.* at 129.

<sup>60</sup> See *id.* at 128 tbl. 1. Of the total congestion costs to the public, 15% is borne by non-motorists in the form of lost time. All congestion costs are imposed by drivers on someone else. See *id.* at 129.

lion), land-associated costs (\$65 billion), and energy costs (\$60 billion).<sup>61</sup> Each of these external costs obviously adds billions to a growing problem.

The costs in Europe vary in value somewhat, but citizens of both Europe and the United States are similarly reliant on their cars as a means of transportation. Cars, roadways, and their effects are significantly comparable for determining the distribution of costs.<sup>62</sup> For example, accident costs<sup>63</sup> are 1.24% of the GNP in the United States and the mean for Europe is 1.25%.<sup>64</sup> Additionally, lost time is a relevant cost in the United States and Europe alike. One London study found that each driver on the road costs all others about fifty cents per kilometer.<sup>65</sup>

External environmental costs cross boundaries to become a global problem. For example, pollution has major economic costs associated with it. Émile Quinet details values for the local pollution costs<sup>66</sup> of automobile transportation at levels which range

<sup>61</sup> See *id.* at 129-31.

<sup>62</sup> See generally CONGESTION CONTROL, *supra* note 4; Underhill, *supra* note 12, at 34-35 (comparing the gridlock and pollution effects of Europe and America).

<sup>63</sup> These costs include the number of dead and injured, as well as material damage costs. See Quinet, *supra* note 43, at 35.

<sup>64</sup> Values range from 0.47% in Norway to 1.92% in Finland. See *id.* at 37 tbls. 2.2-2.3.

<sup>65</sup> See Clay Fong, *Taking It to the Streets: Western European and American Sustainable Transportation Policy and the Prospects for Community Level Change*, 7 COLO. J. INT'L ENVTL. L. & POL'Y 463, 465-66 (1996).

<sup>66</sup> These costs include damage to human health, physical materials, and plant life caused by sulfides, nitrous-oxides, and other particles (excepting carbon dioxide which is a global matter). See Quinet, *supra* note 43, at 43; see also Komanoff, *supra* note 13, at 124 (listing combustion of fuel (which pollutes the air and accelerates global warming), petroleum extraction (which damages human and animal habitats), and noise (which creates stress and disrupts daily life) among the detrimental environmental effects of automobiles in the United States).

This Comment does not focus on the damage done to the environment, but rather looks generally at the economic costs of increased congestion. However, one cannot deny the particular importance of actual environmental damage, especially in the political arena. Seventy-one percent of United Kingdom residents see pollution as the greatest problem of road traffic. See Leyla Boulton & Gillian Tett, *Race on to Clear the Air: Drivers Must Be Persuaded to Use Their Cars Less*, FIN. TIMES (London), Aug. 5, 1996, at 12. It cannot be denied that "a race is on to find technology that can clean up emissions before a build-up in traffic increases the amount of air pollution." *Id.* This may lead one to the conclusion that "no measure for congestion management will be considered in the future which has more negative effects on the environment . . . . However,

from 0.19% to 1.05% of the GNP of several European countries.<sup>67</sup> Moreover, roads constitute a primary source of pollution as they rend landscape, create noise, and add to run-off problems.<sup>68</sup> Also, 10,000 deaths per year in the United Kingdom are attributable to respiratory problems contributed to by vehicles.<sup>69</sup> Global pollution costs, which account for costs associated with carbon dioxide and greenhouse gases, have significant yet undetermined economic effects.<sup>70</sup> Scientists estimate that 21% of all carbon dioxide emissions are related to congestion in OECD countries.<sup>71</sup> The local, national, and global nature of the huge and growing costs of traffic congestion make it necessary to develop an integrated plan.

#### 2.4. Conclusion on the Scope and Costs of Traffic Congestion

Cars continue to enjoy great popularity and clog the roads of Europe. As the European economy flourishes, the growth in traffic congestion is forecasted to increase more rapidly. A large component of increased traffic in Europe results from international travel. Each additional car on the road, regardless of its

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positive effects of measures on the environment . . . could constitute an important argument for implementing measures (possibly more important than arguments like improved efficiency or congestion management)." See CONGESTION CONTROL, *supra* note 4, at 121. Therefore, policies such as creating and/or improving underground mass transit capacity, which typically are championed "for reasons of noise [avoidance] and appearance, much more than for reasons of local pollution," and where levels of overall pollution are "generally neglected," can be publicly justified by environmental protection rationales. See Quinet, *supra* note 43, at 60.

<sup>67</sup> See Quinet, *supra* note 43, at 44 tbl. 2.7.

<sup>68</sup> See the illustration entitled "The Influence of Road and Traffic on the Environment" provided in TRANS-EUROPEAN NETWORKS, *supra* note 2, at 93-95. See Komanoff, *supra* note 13, at 124 (stating that "larger, wider, faster" roads overrun communities, trash landscapes, and destroy the wilderness in the United States).

<sup>69</sup> See Boulton & Tett, *supra* note 66, at 12.

<sup>70</sup> See Quinet, *supra* note 43, at 47-51; see also Fong, *supra* note 65, at 464 ("The production of . . . air pollutants by cars and trucks is a source of global concern.").

There are many estimates of the degree of heating of the earth and its effects. See generally WILLIAM R. CLINE, OECD, GLOBAL WARMING: THE BENEFITS OF EMISSION ABATEMENT (1992). The most significant problem related to global warming costs is that the "extent to which the greenhouse effect has so far been internalized is virtually zero . . ." See Quinet, *supra* note 43, at 60. However, imposing taxes to pay for global warming costs would encourage significant free-rider problems. See *id.* at 63.

<sup>71</sup> See Quinet, *supra* note 43, at 51.

origin or destination, adds huge external costs to an overloaded system. These costs are economic, social, and environmental in nature. Unless Europe controls its congestion problem, traffic-related costs will continue to grow exponentially.

### 3. SOLUTIONS TO THE TRAFFIC CONGESTION DILEMMA

Although early automobile designers and urban planners probably could not have foreseen the profound effects traffic would have upon the landscapes of many nations, they recognized that traffic congestion needed to be addressed. Planners typically relied upon building more roads in order to alleviate the pressure of rising traffic. Growing populations, environmental concerns, and high costs have forced governments to look into new solutions. "Congestion management" policy seeks to package these new solutions in an integrated manner, so as to most effectively deal with traffic problems. In part, congestion management addresses the problems of external costs by forcing internalization. In addition, congestion management strives for new technological solutions. Other regulatory aspects of traffic management play key roles in helping to manage the congestion quandary.

#### 3.1. *The Traditional Solution: Increasing Road Infrastructure*

During the rise of the automobile, many countries dealt with the problem of increased traffic and congestion by increasing the number of roads and adding to their current road infrastructure. Transport planners traditionally built more roads to accommodate more automobiles and to meet the mobility needs of growing populations in Europe and the United States.<sup>72</sup> In urban England, "[t]he belief that road building was an essential component in preventing ultimate traffic strangulation seemed to most observers to be axiomatic."<sup>73</sup> Early planners believed that demand for roads could not be effectively reduced; therefore, they believed the only viable solution was to increase road capacity.<sup>74</sup> The unfortunate result is a road pattern resembling a "complex, irregular cobweb," where the patterns date back to the Middle Ages.<sup>75</sup> Today, in-

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<sup>72</sup> See Fong, *supra* note 65, at 463 & n.1.

<sup>73</sup> HART, *supra* note 8, at 29.

<sup>74</sup> See *id.* at 34.

<sup>75</sup> Some of the most important routes have origins in the Roman Empire. See *id.* at 42. Unfortunately, even in communities that are relatively young in the United States, planners have adopted the nightmarish approach of continu-

vestment in road infrastructure is generally aimed at either providing links to the European area as a whole, by completing peripheral area “missing links,”<sup>76</sup> or increasing capacity on roads where links already exist.<sup>77</sup> There are a number of drawbacks to increasing road infrastructure.<sup>78</sup> Infrastructural augmentation has a huge “lead time”—time between the first proposal and its effective date—which is rarely shorter than ten years.<sup>79</sup> It also requires huge commitments of funds, which currently are more scarce than they were a quarter of a century ago, despite the growing need for such financing.<sup>80</sup>

### 3.2. *A New Approach: The Congestion Management Method*

Paucity of funds, lack of space, environmental concerns, public opinion,<sup>81</sup> and the recognition that traffic congestion and its associated costs are increasing more rapidly has led officials to con-

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ally adding infrastructure. See John Dorschner, *Road to Ruin When All the Highway Construction Is Finally Over, We Will Have Built Ourselves One Big Traffic Jam*, MIAMI HERALD, July 10, 1988, at Tropic-8.

<sup>76</sup> Peripheral areas are those regions such as the United Kingdom, the Iberian Peninsula, and countries bordering on the East, which generally have lesser-developed infrastructures. See EUROPEAN TRANSPORT, *supra* note 1, at 16.

<sup>77</sup> Development of increased road capacity usually involves either constructing alternatives to avoid large cities or simply increasing the number of lanes. However, the ECMT urges an “intermodal” plan involving both land, sea, and air transport. See *id.* at 17. This paper focuses on solutions aimed at land transport by car specifically, but recognizes that a large part of the solution may be derived from other transportation modes.

<sup>78</sup> See Kinnock, *supra* note 17 (noting that major expansion is economically unaffordable and environmentally undesirable).

<sup>79</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 32 (attributing the time lag largely to politicking and necessary budgetary trade-offs).

<sup>80</sup> See Robert Caruth, *UK: Road Plan Scaled Down - Major Cost Cut - Council Gives Backing to Cheaper Single Carriageway*, W. MORNING NEWS, Mar. 6, 1997 (“The amount of money made available for new road schemes has fallen dramatically in recent years and the sum is unlikely to increase in the near future.”) (quoting a statement made by Brian Greenblade, Member of British Parliament); see also EUROPEAN TRANSPORT, *supra* note 1, at 32-33 (providing explanations and graphs).

<sup>81</sup> For example, in the United Kingdom, there is increasing public resistance to new roadwork due to inadequate environmental-impact studies. Public opinion is also against road expansion in Germany and The Netherlands. In France, space has been reserved for increasing infrastructure, but budgetary limits have constrained development. There are similar restraints in the United States. See CONGESTION CONTROL, *supra* note 4, at 120-21.

sider alternatives to increasing road infrastructure.<sup>82</sup> Many European countries have examined hundreds of alternatives, some of the most promising of which are discussed below. Traffic ministries have attempted to integrate many of the proposed solutions by developing a policy on "congestion management." The OECD defines "congestion management" as "the application of administrative, economic, operations, and technological measures aimed at making the most efficient use of *existing* transport infrastructure, modes, and services."<sup>83</sup>

Countries have examined demand-side and supply-side remedies aimed at improving the operating efficiency of the existing transport system. Demand-side policies look at ways of encouraging individuals to use other forms of transportation and discouraging them from traditional road travel by automobile. Supply-side methods include increasing infrastructure, a policy which is generally disfavored by congestion management, and increasing access to alternative forms of transport. Congestion management techniques favor demand-side methods, but often work in concert with other methods.<sup>84</sup> For example, traffic ministries hope to decrease demand for roads by reducing the need for and length of car trips, promoting the use of non-motorized or public transport, promoting carpooling, shifting work away from peak hours or peak roads, and ultimately reducing traffic delays.<sup>85</sup> There are many methods utilized, including land use policy, alternative work schedules, working from home, telecommuting, road pricing, traffic signal improvements, preferential treatment for buses or carpools, and route guidance systems.<sup>86</sup>

A policy related to congestion management is sustainability. "A sustainable society stands for developments which satisfy the

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<sup>82</sup> "Given the growing body of evidence to show that traffic congestion problems cannot be solved simply by expanding the road infrastructure alone, many countries are trying to manage their existing transport systems in order to enhance . . . traffic fluidity." *Id.* at 9-10.

<sup>83</sup> *Id.* at 15 (emphasis added).

<sup>84</sup> Supply-side and demand-side approaches often act in concert. For example, providing a bus lane reduces car demand and increases public transit supply. *See id.* at 16.

<sup>85</sup> *See id.*

<sup>86</sup> *See id.* at 19-20. These measures are alternately effective in urban and inter-urban areas, during peak and off-peak times, in areas where traffic is constant or variable, etc. *See id.* at 19-24 tbls. II.1-II.4 (charting the effectiveness of these measures).

needs of the present society without endangering the possibilities for future generations to satisfy their needs as well.”<sup>87</sup> Addressing increasing traffic congestion solely by increasing infrastructure is detrimental to future generations. A sustainable approach to traffic recognizes that congestion is not an isolated problem.<sup>88</sup> Sustainability requires lower energy consumption, lower costs, and compatibility with sustainable land policies and ways of living.<sup>89</sup> A sustainable approach to transport policy would assess urban planning and zoning, mass transit, alternative transportation networks, and regulations which attempt to better capture the external costs of driving.<sup>90</sup> These ideals are consistent with congestion management and are often incorporated into plans proposed by congestion managers.

### 3.2.1. *Congestion Management Solutions*

Congestion management attempts to integrate as many aspects of traffic policy as possible. The solutions included in a successful congestion management policy will be numerous. Two components that a proficient congestion management approach must include are road-pricing and technological solutions. Additionally, there are many policy aspects that a congestion management policy could include (e.g., land use and zoning, administrative restrictions on and incentives to travel, and increased public transportation) which are beyond the scope of this paper. However, these other aspects are important, and I mention them briefly below to aid in the discussion of an integrated policy at the EU level.

#### 3.2.1.1. *Congestion Management Example I: Road Pricing*

Congestion management must address the external costs of traffic congestion. Congestion management attempts to reduce the costs of traffic congestion as much as possible; therefore, it follows that individuals should pay their full share of costs. This

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<sup>87</sup> *Id.* at 128. Kinnock, the EU’s Head Minister of Transport, has expanded on this definition, arguing that sustainability is “[t]he safe, efficient, environmentally reasonable movement of people and goods at reasonable cost and with dependable access and choice.” Kinnock, *supra* note 17.

<sup>88</sup> See CONGESTION CONTROL, *supra* note 4, at 128.

<sup>89</sup> See Fred A. Reid, *Real Possibilities in the Transportation Myths*, in SUSTAINABLE COMMUNITIES 167, 187 (Sim Van der Ryn & Peter Calthorpe eds., 1986).

<sup>90</sup> See Fong, *supra* note 65, at 467-68.

idea is gaining broader support. It is not only the view of economists, but at the political level, it is also a goal.<sup>91</sup> Reduction of the large external costs<sup>92</sup> requires introducing simple, private rules of pricing and allocation.<sup>93</sup> Although internalization does not eliminate environmental and congestion costs, congestion charges could optimize such costs.<sup>94</sup> Congestion pricing is "a user charge to the motorist that accounts for costs imposed on all motorists as a result of the additional delay caused by that motorist's entry and movement through the traffic stream."<sup>95</sup> It entails assessing vehicles for the congestion they cause and the time losses they impose on other road users, then using one of various methods of incentives or penalties to encourage more efficient road usage.<sup>96</sup> Congestion charges do not include the motorway tolls exacted by countries like France, Italy, and Spain: tolls motivated primarily by revenue-raising considerations.<sup>97</sup> Instead, congestion charges are plans that have traffic restraint and road-funding as their primary objectives.<sup>98</sup>

Congestion charges can be used effectively "[t]o reduce traffic loads, and indirectly, traffic emissions."<sup>99</sup> Evidence of the ability of financial incentives to cause shifts in traffic patterns is quite persuasive.<sup>100</sup> Despite this evidence, there are still few detailed congestion-pricing programs because of the costs of implementa-

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<sup>91</sup> See Arie Bleijenbergh, *The Art of Internalising*, in INTERNALISING, *supra* note 40, at 95, 95. For example, the Dutch government made road pricing "a key element of its traffic policy." *Id.*

<sup>92</sup> See discussion *infra* Section 2.3.1.

<sup>93</sup> See generally Werner Rothengatter, *Obstacles to the Use of Economic Instruments in Transport Policy*, in INTERNALISING, *supra* note 40, at 113.

<sup>94</sup> See Button, *supra* note 40, at 12.

<sup>95</sup> See CONGESTION CONTROL, *supra* note 4, at 38.

<sup>96</sup> See Komanoff, *supra* note 13, at 131. Congestion pricing would reduce aggregate losses and also defray the costs of expanding roads if that became necessary. To properly account for the costs imposed by a driver, congestion pricing would vary with the amount of congestion on the roads during peak and off-peak hours. See *id.* at 131-32.

<sup>97</sup> See Quinet, *supra* note 43, at 64.

<sup>98</sup> See *id.* at 65 tbl.2.15 (listing 11 cities or areas studying and/or utilizing road pricing).

<sup>99</sup> Kågeson, *supra* note 55, at 78.

<sup>100</sup> In the United States, financial incentives led to an intended 8-18% reduction in vehicle trips in certain areas, and when combined with disincentives, vehicle trips can likely be reduced by nearly 50%. In traffic-choked Singapore, congestion-pricing has created a 23% trip reduction over the past four years. See CONGESTION CONTROL, *supra* note 4, at 41-42.



tion and political opposition.<sup>101</sup> Other economic measures used or considered include parking pricing,<sup>102</sup> transportation allowances, public transit and rideshare incentives, transport-pass programs,<sup>103</sup> and other incentives given to employers who encourage anything that reduces traffic congestion.<sup>104</sup> Penalties include smog fees,<sup>105</sup> higher gasoline taxes,<sup>106</sup> and other fees and fines.<sup>107</sup>

Pollution taxes and charges have secondary benefits. The dollars collected can be recycled and used to lower taxes; therefore, a tax on a harm would effectively displace a tax on a good.<sup>108</sup> This aspect of the taxation can help garner public support for the taxation. In the United Kingdom, for example, support for congestion pricing—though remaining relatively low—rose dramatically when the money was earmarked specifically for improving public transport, rather than for a general fund.<sup>109</sup> A double-benefit could arise from this because cars would be both cheaper

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<sup>101</sup> See *id.* at 39.

<sup>102</sup> In Rome, for example, parking is free, and its citizens feel it should be this way by natural right. See Underhill, *supra* note 12, at 35. But, parking pricing includes more than simply paying to park. There are surcharges for peak-period parking and statutes which force employers to charge for parking in private lots. In California, strict parking regulations go into effect when air quality is exceptionally poor. See CONGESTION CONTROL, *supra* note 4, at 38-40.

<sup>103</sup> Public transport passes can be bought by employers and sold to employees. Programs may also include travel-allowance payments and carpool subsidies. See CONGESTION CONTROL, *supra* note 4, at 40.

<sup>104</sup> For example, in Norway, permits are issued to denote which cars can travel to which cities during specified times. A similar method is used in Milan: peak-period entry restrictions. See *id.* at 39.

<sup>105</sup> Smog fees charge money per mile based upon an estimate of the pollutant driver's damage done to health, buildings, roads, and visibility. This charge is based upon the notion that polluters should compensate for any damage they cause. The plan would also require rating each vehicle for its polluting propensity. See Komanoff, *supra* note 13, at 136-37.

<sup>106</sup> Europe is generally less reluctant to charge high gasoline taxes than the United States. The highest gasoline taxes in 1993 were in place in the New York/New Jersey/Connecticut tri-state area, at \$0.34 per gallon. Most European taxes ranged from \$1.75 to \$2.75, and they topped off at \$3.75 in Italy. See *id.* at 142.

<sup>107</sup> One commentator has estimated that, in the United States, unallocated costs derived from human behavior total \$44 billion. Thus, with 170 million drivers, each driver should owe approximately \$260 per year in fines. See *id.* at 145. Other taxes could be levied against freight transport, but that subject is not addressed in this paper. See generally Kågesson, *supra* note 55.

<sup>108</sup> See Komanoff, *supra* note 13, at 156.

<sup>109</sup> See *id.* at 134.

and fewer (benefiting the public), while expenditures on leisure, personal expenses, and public transport would increase (benefiting the individual).<sup>110</sup> Congestion pricing is superior to High Occupancy Vehicle ("HOV") lanes or other preference-type systems that offer only time savings through ride-sharing, because congestion pricing encourages ride-sharing *and* offers money savings.<sup>111</sup>

Critics recognize many problems with road pricing. Some worry that increased transport costs could have detrimental effects on the poor and could cause unemployment,<sup>112</sup> but the ECMT argues that if the extra revenue raised is used effectively, employment may actually rise despite the elimination of a road subsidy.<sup>113</sup> In addition, implementing road pricing could have enormous administrative costs. Although no comprehensive cost-benefit analysis has been done, rough estimates in the United States show that \$80 billion can be raised, with \$70 billion in costs, thus netting \$10 billion in gains. When compared to the situation in 1981, where \$40 billion in costs were associated with transport, but only \$22 billion had been collected, the "high" costs do not appear quite so insurmountable.<sup>114</sup> Other potential problems for road-pricing include resistance to its popular acceptance and employer participation, difficulties associated with accurate valuation and pricing, and avoiding discrimination towards poor and/or urban drivers.<sup>115</sup>

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<sup>110</sup> See Bleijenberg, *supra* note 91, at 101.

<sup>111</sup> This is effective because the greater the number of people sharing costs, the greater the reduction in costs per individual. See Komanoff, *supra* note 13, at 135.

<sup>112</sup> The argument is buttressed by claims that taxes on vehicles and their usage will discourage their purchase but not their use. See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 75. The concern exists that such a trend could threaten new car demand to the point where the automobile industry would possibly collapse. Fortunately, this scenario seems unlikely considering the current reliance of Europeans on their cars and the opening of jobs in other sectors of the transportation industry, such as public transit and telematics.

<sup>113</sup> See Bleijenberg, *supra* note 91, at 101. This notion is based upon the premise that more expensive transport will lead to decreasing turnover of some branches of industry.

<sup>114</sup> In the United States, costs of congestion pricing were estimated to range between \$0.24 and \$13.52 per trip, but the OECD believed such costs would easily be offset by parking revenues and avoidance of other costs. See CONGESTION CONTROL, *supra* note 4, at 42.

<sup>115</sup> See *id.* at 43; see also Quinet, *supra* note 43, at 62 (listing the defects of taxes, including uncertainty in determining environmental effects, psychological opposition, and undesirable redistributive effects).

Another caveat that must be considered is well articulated by Jeremy Vanke, the Policy Chief of the Royal Auto Club of England. Vanke suggests that "[t]he only way to make road pricing acceptable is to have alternatives available."<sup>116</sup> Economic instruments and regulatory measures are simply two factors in a comprehensive strategy that must also include technological solutions, regional planning, and efficient public transport.<sup>117</sup> Congestion pricing relies upon the development and implementation of an automated toll system, and therefore toll plaza bottlenecks are completely eliminated.<sup>118</sup>

3.2.1.2. *Congestion Management Example II:  
Intelligent Transport Systems and Telematics*

Automated toll systems are just one part of a cutting-edge, rapidly-developing traffic management solution called intelligent transport systems ("ITS"). Congestion management must include ITS as another component. Congestion management looks to control traffic through as many means as possible and is particularly demanding of investment in the future. This investment includes purchasing the state-of-the-art technology that constitutes ITS. ITS have "interactive applications to monitor traffic," give feedback to avoid jams, detail length of jams, give optimal driving speeds, and give alternate route options.<sup>119</sup> Components of ITS can include the following: (1) computerized traffic signals which adjust for traffic volume; (2) changeable message signs; (3) electronic toll systems; (4) radio data systems which measure volume and relay it to a traffic control center, where the information can be relayed to in-car electronic maps or message signs (currently operating in southeast England and available in France, Germany,

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<sup>116</sup> Boulton & Tett, *supra* note 66, at 12.

<sup>117</sup> See European Commission, Resolution on the Commission Green Paper in *The Citizens' Network: Fulfilling the Potential of Public Passenger Transport in Europe*, Bulletin of the European Union, Supp. 4/95, at 11-17 [hereinafter Resolution on the Green Paper]; see also discussion *infra* Section 3.2.1.

<sup>118</sup> See Komanoff, *supra* note 13, at 134, 158. This development would yield a tremendous side benefit. See Robert Key Visits First British Demonstration of City Congestion-Charging Technology in Cambridge, Hermes-UK Press Releases, Reuter Textline, Oct. 13, 1993, available in LEXIS (describing the technology of automated tolls, where cards in vehicles allow tolls to automatically be deducted as vehicles pass through, and video cameras are used to record non-payers).

<sup>119</sup> *CRR1 to Develop ITS for Asia Pacific Region*, BUS. STANDARD, Oct. 25, 1996, at 4.

and Sweden);<sup>120</sup> and (5) global-positioning systems which locate cars, give maps, unlock doors, and shut down stolen cars.<sup>121</sup> ITS components, plus "intelligent cars" which can send and receive information and perhaps drive themselves, comprise "telematics," a rapidly growing field encompassing the technologies of electronics, computing, and communications.<sup>122</sup>

Together, telematics and ITS could potentially double the capacity of existing highways as the pieces of the necessary technology fall into place.<sup>123</sup> Recently, a stunning demonstration of intelligent vehicle highway systems ("IVHS") in San Diego, California, showed how magnetic spikes in the road can keep cars moving in platoons traveling together at high speeds. The project is being carried-out by the U.S. National Automated Highway System Consortium, which is a group of corporations, universities, and government agencies attempting to meet the goal of 1991 federal legislation that aimed for the economic and technical feasibility of automated vehicles by 2002.<sup>124</sup> A similar project involving fourteen car manufacturers and fifty research institutes is underway in Europe and receives some EU support.<sup>125</sup> One major stumbling block to implementing IVHS is that the technology is only highly efficient when the infrastructure is widely available

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<sup>120</sup> One of the most developed data collection systems is "Autoguide" in London which inundates travelers on roads, trains, and buses with up-to-date information on traffic congestion. There are problems, however, as drivers are often reluctant to even pay attention to the information, let alone heed its suggestions to take alternate routes. See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 85.

<sup>121</sup> Johanna Powell, *Technology Steers Cars on Safe Paths*, FIN. POST, Aug. 10, 1996, at 4-5.

<sup>122</sup> See *'Intelligent' Systems Provide \$15 Bn Bag of Opportunities*, FIN. TIMES, Mar. 6, 1997, at 7 [hereinafter *Intelligent Systems*].

<sup>123</sup> Conventional highways carry 2000 vehicles per hour per lane, which is too many to be obeying the "two second rule" for safety. Automated vehicles travel one half second apart and have 3600-4000 vehicles per hour per lane, according to Colin Rayman, Manager of Ontario (Canada) Ministry of Transportation, ITS Office. See Powell, *supra* note 121, at 4.

<sup>124</sup> A proposition has been made that in North America, the progress of automated vehicles has been stifled by societal issues of trust, liability, and privacy, rather than technology. See *id.* Cf. Sheri A. Alpert, *Privacy and Intelligent Highways: Finding the Right of Way*, 11 SANTA CLARA COMPUTER & HIGH TECH. L.J. 97, 97-104 (giving an overview of Intelligent Vehicle Highway Systems and possible intrusions into privacy).

<sup>125</sup> See generally *International/European Projects* (visited November 30, 1997) <<http://www.ITS-highway.org/world/eu.html>>.

and can be fully integrated into a complete system.<sup>126</sup> It should be recognized that telematics cannot be the only answer. The U.S. and European experts agree that while outfitting all highways with ITS technology could increase capacity by one-third by 2005, congestion is estimated to double by that time.<sup>127</sup> These factors as well as reluctance to commit public funding to implementation have been the principal factors behind the slow growth of ITS.

### 3.2.1.3. *Other Solutions of Integrated Congestion Management Policies*

The other aspects of congestion management that should be mentioned include public transit, land use policy, and administrative measures. One of the major goals of congestion management is to find alternative modes of transport to private automobile use, i.e., trains, street cars, buses, ferries, and even helicopters. Unfortunately, "[n]o other mode is in any position to replace road transport on a large scale . . . ." <sup>128</sup> When choosing a mode of transport, a consumer normally considers the following: (1) the availability and comprehensibility of information available about the mode; (2) conditions of access such as necessity of a license or passport; (3) level of service, including comfort, safety, travel time, reliability and waiting time; and (4) costs of the journey.<sup>129</sup> Traffic Policy Managers can manipulate these factors in such a way as to alter choices. However, even a 50% increase in the use of an alternative passenger-transport mode is likely to lead to only a minor percentage decrease in road traffic, which would probably not keep pace with the annual growth rate in road traffic.<sup>130</sup>

Land-use and zoning law is another policy alternative used to reduce congestion. It attempts to provide a framework for growth in an area by promoting environmental protection, public

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<sup>126</sup> See *Intelligent Systems*, *supra* note 122, at 7. However, there are technologies which do not require government involvement, such as the following: navigation, route guidance, CD-ROM, fax, Internet, collision-avoidance systems, and driver-alertness monitors. See *id.*

<sup>127</sup> See *id.*

<sup>128</sup> TRANS-EUROPEAN NETWORKS, *supra* note 2, at 74.

<sup>129</sup> See EUROPEAN TRANSPORT, *supra* note-1, at 24.

<sup>130</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 75. The Commission also quotes a study which predicts that only a 7% decrease in traffic would result from a 50% increase in rail ridership in Germany. See *id.* at 75.

safety, and the general welfare.<sup>131</sup> Urban planners examine patterns of land use and site design of neighborhoods to determine the most effective way to influence a person's mode choice.<sup>132</sup> Several effective zoning policies exist, such as the following: (1) developing "neighborhood commercial districts" (living in the community where one works); (2) encouraging development of recreational, employment, and retail land uses near homes;<sup>133</sup> (3) encouraging public transport-compatible development on vacant parcels; (4) discouraging auto-oriented land uses such as parking lots; (5) increasing residential density along existing public transit routes; and, (6) planning pedestrian and bicycle access and priorities.<sup>134</sup> All of these initiatives require governmental and institutional involvement to be implemented effectively. Several countries have tried land-use policies with varying degrees of success, but there is little uniformity.<sup>135</sup>

One planning measure, telecommuting, completely eliminates the need for travel to work. Telecommuting is the substitution of telecommunications for the daily commute.<sup>136</sup> Teleconferencing, teleshopping, and "cyber" services can reduce car trips even more.<sup>137</sup> Still, there are limits to the effectiveness of these measures. Nations must rely on employers to implement these changes, despite the fact that employers have little incentive to do so now.<sup>138</sup> Also, the effects of telecommuting on traffic are currently questionable, because most employees will still have their

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<sup>131</sup> See CONGESTION CONTROL, *supra* note 4, at 25-26.

<sup>132</sup> For example, a person may be able to walk to work if the workplace is only a few blocks away. The person may choose to travel to work by train if it stops very close to his home and his workplace. See *id.* at 26.

<sup>133</sup> See generally Powell, *supra* note 121 (discussing former Prime Minister Major's plans to stop strip mall growth).

<sup>134</sup> See CONGESTION CONTROL, *supra* note 4, at 26-27.

<sup>135</sup> For example, Switzerland has a "Federal Town and County Planning Law," which attempts to achieve reduction in home-to-work trips with emphasis on reduced parking and increased public transport. The plan has resulted in a 40% public transport ridership increase in Bern. The Hague in The Netherlands gave large tax breaks to businesses located near public transport, and as of 1990 found that there was a 50% decrease in car usage. Sweden's Traffic Planning Guidelines also discourage the use of autos in favor of public transport. See *id.* at 28.

<sup>136</sup> See *id.* at 29.

<sup>137</sup> See *id.*

<sup>138</sup> See *id.* at 30.

cars around to use for other trips during the day.<sup>139</sup> The cost-effectiveness is currently unknown, but one forecast estimates a \$23 billion savings in transport and energy costs given a 10% to 20% increase in telecommuting.<sup>140</sup> Other problems include changing management attitudes; questions of security, control, and liability; health and safety concerns; zoning restrictions; and effects on productivity.<sup>141</sup>

Other government-sponsored projects include large scale traveler-information services. These programs provide preparatory information on which routes to take and when to take them, carpooling, and other modes of transportation.<sup>142</sup> The goal of that type of service is to make it as convenient as possible for travelers to access the best information quickly. The information services also have the advantage of being able to better direct efforts at particular travel markets such as commuters, students, or tourists.<sup>143</sup> Traveler information service is a type of "road traffic operations" which includes all measures that manipulate the road system to encourage, enable, or force the most efficient traffic flow.<sup>144</sup> Road traffic operations systems, when operating optimally, may be able to improve average speeds by 20%.<sup>145</sup> Information which could help relieve pressure on the overburdened infrastructure can be disseminated by mail, television, radio, and work bulletin boards.<sup>146</sup> Once again, large informational costs ex-

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<sup>139</sup> However, these trips are likely to be shorter and at off-peak times. See *id.*

<sup>140</sup> See *id.* at 31. Examples of telecommuting projects in California show that work trip rates decreased from 0.9 to 0.63 trips per day for state employees. In The Netherlands, participants in a project worked 20% to 60% of the time at home, and there were 15% fewer journeys made and no noted increase in trips made for other reasons. See *id.* at 32.

<sup>141</sup> But see *id.* at 31 (noting that one Los Angeles pilot project reported that 80% of telecommuters *increased* their work productivity).

<sup>142</sup> See *id.* at 33.

<sup>143</sup> For example, Europe has several national information centers, such as Bison Futé in France and AUTOSTRADE in Italy, which give information to commuters and travelers. Project "Countdown" in London gives up-to-date travel time information with electronic signs at bus stops, which draw information from vehicle location equipment. The main U.S. method is the use of rideshare matching programs. See *id.* at 36-37.

<sup>144</sup> See *id.* at 54.

<sup>145</sup> See *id.* at 56.

<sup>146</sup> See *id.* at 33-35.

ist.<sup>147</sup> There are cross-jurisdictional coordination difficulties and accuracy problems, as well as problems with getting commuters to sacrifice what is familiar to them.<sup>148</sup>

Land-use and zoning law, telecommuting, traveler information systems, and similar aspects of congestion management can all be categorized as administrative measures. Administrative measures are "agreements and structures that underlie or help to enhance implementation of congestion management measures in a local area."<sup>149</sup> These are not in and of themselves management, but rather are organizational relationships and regulations which support aspects of congestion management.<sup>150</sup> The main objective of these measures is to facilitate the effective implementation of peak-period car trip reduction measures.<sup>151</sup>

Administrative action relies upon the participation of the business community. Businesses can help implement government policies, influence commuters' mode of transit choices, and pay

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<sup>147</sup> The U.S. Department of Transportation estimates a typical cost of less than \$7 per day to remove each commuter from the road by using an information program. *See id.* at 35. Road traffic operations may be highly cost-effective, though, with experience indicating a possible \$17 benefit for each \$1 invested in programs in major metropolitan areas. *See, e.g., id.* at 57.

<sup>148</sup> *See id.* at 35-36, 57.

<sup>149</sup> *Id.* at 47.

<sup>150</sup> One such relationship is a "business roundtable" which brings together numerous local employers in a community in order to address issues such as congestion. *See id.*

<sup>151</sup> This can be accomplished through "transportation partnerships," trip reduction ordinances, alternative/flexible work schedules, auto-restricted zones or times, and parking management measures. *See id.* at 48. Examples include "auto-restricted zones" as in Visby, Sweden, where a thirteenth-century wall is preserved and only "legitimate" traffic is allowed to enter the gates during the summer months; "signal parks" as in Munich, Germany's International Airport where digital signs guide patrons to the closest unoccupied parking spaces; and "alternative work schedules" in The Netherlands, where Ministry of Transport and Public Works employees were given the option of working a five-day, 38-hour week or a four-day, 36-hour week which lowered traffic, but did not alter mode choice. *See id.* at 52-53.

Another commonly used measure is "preferential treatment," which improves the travel speed, safety, or reliability of a particular mode of travel. Some examples of this are bus lanes, HOV lanes, bike lanes, and traffic light preemption. The goal of preferential treatment measures is to achieve a more equitable share of the road in order to decrease congestion. The key is saving time, not necessarily saving money. Regardless, there are still problems of undetermined costs, enforcement, and empty lanes. *See id.* at 63-67.



for the costs of implementation.<sup>152</sup> However, the costs are not yet certain. There would be information and administrative costs to the government and possible compliance costs to employers.<sup>153</sup>

### 3.3. *Conclusions on Traffic Solutions*

An approach which simply builds more roads and increases road infrastructure is no longer viable in Europe. A lack of space and a huge overabundance of cars make such solutions inadequate. Government traffic ministries must turn toward congestion management techniques. Congestion management integrates various disciplines of economics, science, and policy. One management solution, road pricing, compels drivers to pay for their external costs. ITS and telematics solutions suggest numerous technological solutions to traffic congestion problems. Other aspects of congestion management include regulatory measures which alter work schedules, regulate land usage, and provide a myriad of information sources to avoid congested routes. Congestion management has clearly gained acceptance as the wave of the future.

## 4. NATIONAL TRAFFIC CONTROL PLANS VERSUS INTERNATIONAL PLANS

Most traffic management in Europe occurs at the national level. Each country approaches traffic differently, and each nation attaches a different importance to developing a management plan. This gives rise to an erratic and inefficient scheme across Europe. In order to prosper, it will be necessary for Europe to develop greater coordination between national policies. This will aid in comparing and developing solutions, as well as in avoiding conflicts between proposed national plans. Implementation and regulation of many congestion management applications necessitates coordination. Also, coordination will help defray the large costs by utilizing collective action and enrolling the aid of the business community.

The EU is the most logical choice of organizations to enforce coordination. The EU's policies and mandates make it competent

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<sup>152</sup> Businesses can change their employees' working hours, create flexible scheduling, limit parking spaces, and provide commuter passes to employees. *See id.* at 50.

<sup>153</sup> The U.S. cities which administer their own budgets have costs as high as \$2.60 per employee. Programs may recoup some expenses, but rarely will they recoup all of the costs. *See id.* at 51.

in handling a transnational plan, but there may be some obstacles. These obstacles are psychological, political, and financial in nature, but for the most part are minor, considering the numerous benefits of coordination and internationalization of congestion management.

#### 4.1. *The Multiplicity of National Plans Across Europe*

Currently, European nations develop their own traffic management plans. Each country examines and attempts to remedy its own traffic problems. Although the EU aspires to develop more sustainable transportation solutions, it has been national governments, and not the EU, who have generally taken the lead.<sup>154</sup> Many nations emphasize one proposed resolution over another or emphasize trying to reduce one aspect of traffic rather than another.<sup>155</sup> The result is that Europe has a patchwork of traffic solutions, rather than a network, and "it is a patchwork with holes in it."<sup>156</sup>

National transport development plans occupy places of varying importance in the politics of European countries. Parliamentary bodies must approve traffic policies in Austria, Switzerland, the Netherlands, and Germany, while some other countries do not even have national transport-development plans.<sup>157</sup> Congestion management plans may be separate plans or appear as integrated portions of larger environmental, land-use, safety, or freight policies.<sup>158</sup>

Aside from determining where national traffic policies fit in the grand scheme of policies within a nation, the approaches to analyzing the usefulness of such policies vary widely.<sup>159</sup> Among

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<sup>154</sup> See Opinion of the Committee of the Regions on 'Spatial Planning in Europe,' 1997 O.J. (C 116) 1 [hereinafter *Spatial Planning in Europe*].

<sup>155</sup> EU Members "continue to spend large sums on developing their transport infrastructures . . . according to national needs and priorities." *The European Union's Transport Policy* (last modified Nov. 11, 1997) <<http://europa.eu.int/en/eupol/trans.html>> [hereinafter *EU Transport Policy*].

<sup>156</sup> *Id.*

<sup>157</sup> See Quinet, *supra* note 43, at 61.

<sup>158</sup> See CONGESTION CONTROL, *supra* note 4, at 83-87. In the United States, the option of having a congestion management plan that is integrated into a larger policy has not been exercised like it has in Europe, according to the OECD. See *id.* at 86 ("While in most European countries, congestion management is often part of a broader transport policy, in the U.S. congestion management programmes have been developed as a separate transport policy . . .").

<sup>159</sup> EUROPEAN TRANSPORT, *supra* note 1, at 138.

European nations, several major approaches to traffic congestion exist which are intended to either influence demand, modify the modal split,<sup>160</sup> gear trends toward the economic and social environment, or promote regional development. Since these approaches focus on different areas, conclusions about their effectiveness are not easy to compare.<sup>161</sup> Some countries separately calculate the international traffic component, while others do not. Nations utilize different methods of counting cars, including counting by the number of vehicles, number of passengers, and number of miles driven. Even when countries use similar approaches, their assumptions, calculations, and conclusions about the effects of traffic on the economy widely vary.<sup>162</sup> For example, even a simple calculation such as determining losses with respect to GDP leads to variable results.<sup>163</sup> Some member states examine optimistic and pessimistic scenarios (The Netherlands and France), and some nations use factors in addition to GDP when making such calculations (Germany and The Netherlands).<sup>164</sup> When examining "traffic," members of the EU categorize traffic by methods which seem to be haphazardly chosen.<sup>165</sup> The ECMT argues that the chosen methods are unhelpful and insufficient. They would favor greater studies including breakdowns by length of haul, by purpose of the journey, by number of passengers, by income of passengers, by delineating type and origin of freight, or by studying travel between zones within a country.<sup>166</sup>

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<sup>160</sup> The modal split is the breakdown of numbers of people who take different modes of transport, i.e., the number who travel by automobile, rail transport, air transport. *See id.* at 130.

<sup>161</sup> *See id.* at 138.

<sup>162</sup> A related problem is the complete lack of good records. The ECMT emphasizes the need for common bases and data. *See id.* at 42, 210 (lamenting the lack of good data on tourism traffic, a largely ignored, key international traffic component).

<sup>163</sup> *See id.* at 119 (outlining the calculations by Germany, Spain, Finland, France, the United Kingdom, Ireland, and The Netherlands).

<sup>164</sup> *See id.* at 120-21.

<sup>165</sup> Proper categorization includes distinctions based on origin or destination, major or minor flows, and purpose of trip. *See id.* at 124-26.

<sup>166</sup> *See id.* at 126-29.

#### 4.2. *An International Approach to Traffic and the European Common Market*

Apart from an inability to compare methods and their effectiveness, it would not matter what resolution a country chose if the European nations were isolated or did not aspire toward the creation of a European Common Market.<sup>167</sup> "[A]ctions implemented at [the] national level have an impact on the fluidity of traffic flows across Europe and reciprocally, international traffic is becoming an increasingly important component of economic and social activity and accounting for an ever larger share of total traffic."<sup>168</sup> In many cases, planning for the resolution of some traffic difficulty in one region or nation will encroach upon other areas.<sup>169</sup> Therefore, "urban areas should be encouraged to deal with transportation problems on an overall integrated basis to attack problems which spill over the boundaries of individual governmental units."<sup>170</sup> With the noted increase in international traffic and the emphasis upon globalization,<sup>171</sup> these considerations become increasingly important. However, stemming national traffic congestion remains the main concern of most nations.<sup>172</sup> More damaging to international traffic congestion is the fact that nations may be unwilling to subdue their international competitiveness, and thus usually react leniently when faced with international traffic solutions.<sup>173</sup>

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<sup>167</sup> This is especially noteworthy because even though the United Kingdom, Portugal, and Scandinavia are arguably "isolated," they clearly support the EU's plans for a common market. See P.S.R.F. MATHIJSEN, A GUIDE TO EUROPEAN COMMUNITY LAW 1-14 (5th ed. 1990).

<sup>168</sup> EUROPEAN TRANSPORT, *supra* note 1, at 24; see also *infra* Section 2.2.

<sup>169</sup> See HART, *supra* note 8, at 36 ("[E]verything affects everything else," says R.M. Kirwan, an urban planner).

<sup>170</sup> *Id.* at 40 (internal quotes and citation omitted).

<sup>171</sup> One EU body has defined globalization as "the intensification of international competition through the emergence of a potentially unique worldwide market for an expanding range of goods, services and factors, [which] brings out the full importance of that responsibility on the part of national and Community authorities as regards competitiveness." See *Chapter 2: The Conditions for Growth and Enhanced Competitiveness* (visited January 10, 1998) <[http://ig.cs.tu-berlin.de/EU/WhitePaper/ch2a/ch2a\\_1.html](http://ig.cs.tu-berlin.de/EU/WhitePaper/ch2a/ch2a_1.html)> [hereinafter *Conditions for Growth*]; see also EUROPEAN TRANSPORT, *supra* note 1, at 23 ("[G]lobalisation . . . can no longer be dissociated from concern with environmental protection and the preservation of the quality of life.").

<sup>172</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 117.

<sup>173</sup> See Bleijenberg, *supra* note 91, at 104.

This tragic fact should no longer be the case in Europe, because the EU has recognized the necessity of creating a common market in order to compete in an increasingly global market.<sup>174</sup> To compete in the globalized market, the EU's "Agenda 2000" aims at developing a single currency and accomplishing four elements of internal reform: (1) greater budget priority to the EU's internal policies, such as research and development; (2) the confirmation of economic and social cohesiveness as a top priority; (3) agricultural reform; and (4) the extension of external relationships and expansion.<sup>175</sup> The EU also recognizes that while "the globality and complexity of the [transport] system has become more widespread, the solutions proposed have largely remained inoperative . . . ."<sup>176</sup> For these reasons, the ECMT's traffic objectives are threefold: (1) to examine whether different countries act consistently; (2) to adopt global approaches to national and international traffic; and, (3) to collect a large amount of the latest data.<sup>177</sup>

The approach that simply compared various countries' policies and experiences is no longer helpful to the current marketplace. Harmonization should be the goal, and some keys to reaching that goal include coordination of planning, general speeding up of the process, and taking account of international factors.<sup>178</sup> The Maastricht Treaty on European Union<sup>179</sup> speaks of the development of a pan-European plan which serves as good evidence of its importance, however it gives no entitlement establishing either priorities or commitments.<sup>180</sup> Maastricht gives

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<sup>174</sup> See *Conditions for Growth*, *supra* note 171 ("For the level of employment in the Community to improve, firms must achieve global competitiveness.").

<sup>175</sup> See *The European Commission: The Week in Europe*, M2 PRESSWIRE, Sept. 26, 1997, available in LEXIS Library, Wire Service Stories (summarizing a speech by European Commission President Jacques Santer on Sept. 19, 1997).

<sup>176</sup> EUROPEAN TRANSPORT, *supra* note 1, at 53.

<sup>177</sup> See *id.* at 117.

<sup>178</sup> See *id.* at 11.

<sup>179</sup> Referred to as the "Maastricht Treaty" or simply "Maastricht," the treaty was signed February 7, 1992, and became effective on January 1, 1993. This treaty lays the foundations for the Economic and Monetary Union. See Treaty on European Union, Feb. 7, 1992, 32 I.L.M. 1693; see also GEORGE A. BERMAN ET AL., CASES AND MATERIALS ON EUROPEAN COMMUNITY LAW 16 (1993). For information on the EU generally, see MATHIJSEN, *supra* note 167 and Claus-Dieter Ehlermann, *The "1992 Project": Stages, Structures, Results and Prospects*, 11 MICH. J. INT'L L. 1097 (1990).

<sup>180</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 15.

transport a new dimension of importance by assigning it "a role in the promotion of economic and social integration in Europe."<sup>181</sup> We can interpret this to mean that a unified market will only occur if there are satisfactory networks of transportation and communication, and that freedom of movement and trade is only effective if the networks are good.<sup>182</sup> If the EU wishes to meet its noble goals, it should set forth a method for recognizing transport needs, establishing objectives, and carrying-out the necessary work in a timely fashion.

A trans-European network,<sup>183</sup> overseen by a central body, will contribute to the attainment of major Community objectives, such as the functioning of the common market and the strengthening of socio-economic cohesion.<sup>184</sup> Europe's ascendancy will be due in part to its ability to develop the movement of people and goods, "marry[ing] economic prosperity, quality of life and commercial efficiency."<sup>185</sup> The Commission has recognized that the current model is inadequate for this mission.<sup>186</sup> A trans-European network could accomplish numerous goals such as the following:

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<sup>181</sup> *Id.* at 195; see also Opinion on Urban Development and the European Union, 1996 O.J. (C 100) 78, 85 [hereinafter Urban Development and the EU] (stating that Article 129b of Maastricht calls for the establishment of transnational networks in the area of transport).

<sup>182</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 195.

<sup>183</sup> The network includes motorways and high quality roads which: (1) play an important role in long-distance traffic, (2) bypass the main urban centers, (3) provide interconnection with other modes of transport, or (4) link land-locked or peripheral regions. See Council Directive 1692/96, art. 5, 1996 O.J. (L 228) 1-2.

<sup>184</sup> See *id.* at 1; see also *Development Theme II: Trans-European Transport and Energy Networks* (visited Jan. 10, 1998) <[http://ig.cs.tu-berlin.de/EU/White-Paper/ch02/ch02\\_1.html](http://ig.cs.tu-berlin.de/EU/White-Paper/ch02/ch02_1.html)> [hereinafter *Development Theme II*] (explaining how a trans-European network would seek optimum multi-modality and complete the single market).

<sup>185</sup> *Development Theme II*, *supra* note 184.

<sup>186</sup> The Commission relies on several factors in drawing its conclusions. First, sustainable mobility is dependent on a reduction of traffic flows. Second, passenger traffic is impeding freight and business. Third, increasing intermodality will reduce and shift the traffic. Fourth, there is a direct link between construction of trans-European networks and promoting public transport. Fifth, all costs incurred by transport must be allocated to the various modes rationally. Sixth, community objectives on government procurement require inclusion of public transport. Seventh, more resources should be made available to the EU. Finally, eighth, the obstacles to the social and economic development of the peripheral regions of the EU, perpetuated by their remoteness, could be removed by an increased EU role. See Resolution on the Green Paper, *supra* note 117.

(1) creating a more vigorous economy; (2) providing the highest safety and the least congestion; (3) offering a wider range of transportation choices to travelers; (4) establishing better connections between the regions and the periphery of the EU; and (5) including third-party links with partner countries in Europe, if necessary.<sup>187</sup> Additional benefits could include sustainable mobility<sup>188</sup> and possible job creation.<sup>189</sup> The Commission of the European Communities hopes that developing a trans-European network by 2010 would do the following: (1) ensure mobility with the best possible social and safety conditions; (2) offer infrastructure at acceptable economic terms; (3) include all modes of transport; (4) be "insofar as possible, economically viable;" and (5) cover the whole territory of the Member States, thereby including peripheral regions.<sup>190</sup>

#### 4.2.1. *Integrating Urban Areas into the International Network*

One area of further concern for the EU is integration of its urban areas. These areas are recognized as sites of the most "innovative economic actions in the European Union," and as "central to the economy of their regions and states and to the competitiveness of the whole of the European Union."<sup>191</sup> The future of urban areas in the EU is central to the interests of the Union. The urban areas' interests in relieving traffic congestion relate rather directly to the Union's interests in relieving traffic congestion. Additionally, traffic congestion relief will have a very positive effect upon these critical regions.<sup>192</sup> To meet the goal of pro-

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<sup>187</sup> See *EU Transport Policy*, *supra* note 155.

<sup>188</sup> The EU has expressed broad support for sustainable transport and recognizes the important role it plays in managing congestion. See Opinion of the Committee of the Regions on the 'Proposal for a Council Decision on the Promotion of Sustainable and safe Mobility,' 1997 O.J. (C 244) 33, 33 ("EU transport policy must be developed and given practical substance in order to promote sustainable and safe mobility throughout the whole transport sector.").

<sup>189</sup> See European Parliament and Council Decision 1692/96, 1996 O.J. (L 228) 1, 1. The transport sector is pivotal to the overall EU economy. See *EU Transport Policy*, *supra* note 155 (noting that transport accounts for an estimated 6.5% of the EU's GNP and employs more than six million people).

<sup>190</sup> European Parliament and Council Decision 1692/96, *supra* note 189, art. 2, at 2.

<sup>191</sup> Urban Development and the EU, *supra* note 181, at 78.

<sup>192</sup> See *id.* at 82.

viding the urban areas with instruments to manage and develop their social and economic foundations, the EU must develop a more uniform urban transportation policy.<sup>193</sup> Simultaneously, uniform congestion management solutions for the entire EU should be developed. Ultimately, the goal in this area is a fairly simple one: "common policy in transport."<sup>194</sup>

#### 4.2.2. *Institutional Regulation*

A policy aiming for uniformity inevitably must include institutional regulation. The regulations should operate along democratic lines concerning long-term decisions and recognize that intervention by international, as well as national and regional institutions, is legitimate.<sup>195</sup> This is one of the theories underlying the Prague Declaration of October 31, 1991, made by representatives of the governments of the European States together with representatives of international organizations. The Declaration laid the foundations of pan-European transport policy and set forth three goals with regard to transportation: (1) "[i]ntegration of the socio-economic effects and environmental impact" of transport systems; (2) "[s]patial integration" by means of infrastructure projects that supersede national plans; and (3) a global approach to multi-modal integration.<sup>196</sup> By increasing international institutional regulation, the EU can affect the market and national policies adopted with respect to congestion management.<sup>197</sup> Fortunately, some EU bodies have already recognized the importance and effects of international cooperation.<sup>198</sup>

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<sup>193</sup> See *id.* at 89 ("[U]rban policy is already being developed at a European level, but in a fragmented and uncoordinated way."). The coordination of urban policy is needed to enable European urban policy to be clarified with respect to the overall coordination policy and to help ascertain the appropriate level of policy implementation. See *id.*

<sup>194</sup> *Id.* at 82.

<sup>195</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 204.

<sup>196</sup> *Id.* at 196, 200.

<sup>197</sup> See *id.* at 204.

<sup>198</sup> See Spatial Planning in Europe, *supra* note 154 § 1.3.3 ("There was . . . unanimous recognition of the remarkable effect that cross-border and transnational cooperation has on accessibility . . ."); see also Fong, *supra* note 65, at 482 ("[I]nternational cooperation can be a powerful tool in creating beneficial transportation programs.").

Fong's article demonstrates that international cooperation need not only take place between EU nations in order to be effective. As an example, Fong described a very successful "sister city" project between Minnesota's Depart-



As discussed above,<sup>199</sup> it is necessary to develop better databases on traffic flows across the EU as a whole. One key element that the EU must address is the “marked deficiency of international statistics on flows” of international traffic.<sup>200</sup> The development of a uniform European system of statistics would be very helpful. These data would assist the EU, as well as the Member States, in deciding which investments would make the most efficient use of existing networks, especially in light of the growing international traffic.

Any regulation of the rapidly increasing international aspects of traffic has effects upon the EU as a whole. Since international traffic accounts for a lesser part of traffic in densely populated areas, national policies often fail to adequately address it.<sup>201</sup> Therefore, the main aim of coordinating data is to address the international traffic problem. International mobility must be given adequate consideration, and the effects of measures narrowly tailored to daily journeys in high density areas should also be examined.<sup>202</sup> An international body such as the EU Commission<sup>203</sup> or one of its Committees is best suited to coordinate this effort. Even if an EU body does not administer the policy, internationalization of policies would help in at least two ways: (1) setting uniform, easy to understand charges for road-pricing and education programs for travelers, and (2) ensuring exchanges of experience in order to optimize and establish more compatibility among decentralized plans.<sup>204</sup> This would be particularly beneficial for centrally-located European countries where concentrations of international traffic are highest.

Nevertheless, even for the balance of the EU Member States, centrality offers the benefit of association with an “economically

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ment of Transportation and the Finnish National Road Administration. An agreement was drafted between the two countries’ agencies that “included provisions for developing ‘professional exchanges and visits, co-operative research programs and shared knowledge . . . .’” *Id.* at 475.

<sup>199</sup> See *supra* notes 161-166 and accompanying text.

<sup>200</sup> EUROPEAN TRANSPORT, *supra* note 1, at 12.

<sup>201</sup> See *id.* at 16. In addition, most authorities throughout Europe are local.

<sup>202</sup> See *id.* at 21.

<sup>203</sup> For a discussion of the workings of EU Government bodies, see *infra* note 221.

<sup>204</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 22.

integrated and politically harmonious entity.”<sup>205</sup> Thus, peripheral nations, which view a European approach and a national approach as mutually exclusive options,<sup>206</sup> must be convinced that a European approach is necessary to accomplish the laudable goals of the EU. “The European area must be seen as a coherent whole in terms of the network formed by the major routes for international traffic flows.”<sup>207</sup>

#### 4.2.3. *Regional Involvement*

Despite calls for uniformity, one cannot lose sight of the fact that “[t]here are no perfect transportation patterns because this presupposes a level of uniformity among cities which does not in fact exist.”<sup>208</sup> Inevitably, some diversity exists among schemes.<sup>209</sup> For this reason, regional and local authorities are the most effective partners in EU-planning projects.<sup>210</sup> Still, the schemes should be compatible with international aspects of travel: justifying assumptions of growth and clarifying the assumptions in circumstances in which international traffic flow has been considered.<sup>211</sup> All in all,

Regional and local policy-makers understand better than anyone the problems facing their areas and the solutions

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<sup>205</sup> *Id.* at 70. Evidence of this can be drawn from the fact that centrally located European countries have the most mature national networks. Maturity is measured by looking at traffic data availability, attempts at political solutions, and suggested solutions which extend beyond merely increasing supply. It is largely the peripheral countries (excluding the UK and the Scandinavian countries) that are behind in this area. See *id.* at 69.

<sup>206</sup> See *id.* at 91.

<sup>207</sup> *Id.* at 213.

<sup>208</sup> HART, *supra* note 8, at 36.

<sup>209</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 13 (attributing diversity to national and regional options).

One approach advocated to promote cooperation among territorial groups is the use of a regional determination scheme based upon three factors: (1) geography; (2) history and culture (which have largely been submerged, but need to be rediscovered); and (3) economy, including similarities in types of economic activity, living standards, and pollution concerns. See Spatial Planning in Europe, *supra* note 154, at 3.

<sup>210</sup> See Spatial Planning in Europe, *supra* note 154, § 1.2.3.

<sup>211</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 14; see also *id.* (arguing that local authorities must recognize that their collective responsibility is to all other parts of the EU).

required. They are also aware that they cannot resolve all the problems alone. As neighboring regional and local authorities have to address the same problems, they find that the most logical and effective action is to combine efforts in order to find common solutions and pool resources to implement them. They have no apprehension . . . and focus rather on the potential extra benefit to be derived. . . . This will to cooperate is essentially dictated by efficiency.<sup>212</sup>

#### 4.2.4. *Financing the Proposed Solutions*

This drive toward efficiency underscores the need for centralized fundraising. The suggested solutions to the growing problem of traffic congestion are associated with high costs. The existing financial situation for most individual Member States leaves little margin for increasing public financing beyond what is currently planned. Thus, massive investment requires greater public-private partnerships.<sup>213</sup> Current needs are estimated at ECU 30 to 35 billion per year, and given current finances, the EU would need ECU 130 billion, outside of member states' contributions, to proceed.<sup>214</sup> The EU must encourage private investment, which is currently provided rather reluctantly.<sup>215</sup> Since the European Community Treaty ("EC Treaty") assigns to the EU the responsibility of coordinating its members, the EU should launch the necessary fund-raising and education campaign. As previously argued in this comment, a unified effort would be more successful. Community-level activity is a catalyst essential to unlocking private investment in a common market.<sup>216</sup>

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<sup>212</sup> Spatial Planning in Europe, *supra* note 154, § 1.1.1.

<sup>213</sup> See Chapter 3: *Trans-European Networks*, § 3.3 (visited January 10, 1998) <[http://ig.cs.tu-berlin.de/EU/WhitePaper/ch3/ch3\\_1.html](http://ig.cs.tu-berlin.de/EU/WhitePaper/ch3/ch3_1.html)> [hereinafter Chapter 3].

<sup>214</sup> See *id.* § 3.4 (estimating a ECU 220 billion investment for trans-European networks of which amount the EU could mobilize ECU 90 billion).

<sup>215</sup> This can be attributed to the inherent risks in such projects, as well as uncertain profits. See *id.* This comment suggests that these risks and uncertainties should be recognized and eliminated through more effective international congestion management.

<sup>216</sup> See *id.* § 3.3.

#### 4.3. *Competence of the European Union to Decide Congestion Management*

Calls for the EU to become more involved in developing an integrated, trans-national congestion management policy obviously assume that the Union has the competence to make such decisions. Several EC Treaty articles call for and give the Union authority to publicly run transport services if that is deemed necessary.<sup>217</sup> The Treaty of Rome (Treaty of a European Economic Community, or the "EEC Treaty") urges a common transport policy.<sup>218</sup> The Commission has stated that Article 130 of the EC Treaty "sets as a priority objective the harmonious development of the Union and stipulates that this should be achieved by means of action of all kinds leading to the strengthening of economic and social cohesion, in particular, reducing disparities between the levels of development of the various regions . . . ."<sup>219</sup> A broad construal of this objective would include shaping a sustainable public transport network for the benefit of all citizens. Coordination of these networks should take place at the Union level.<sup>220</sup> Since this duty falls within the powers of the EU, a failure to exercise them may ultimately result in a failure to design a solution to congestion problems.

To avoid this, the EU must take better advantage of the policy instruments available to it. The EU has the ability to pass legislation aimed at harmonizing the fiscal and technical provisions of the policies of Member States.<sup>221</sup> Other pivotal EU roles include

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<sup>217</sup> See TREATY ESTABLISHING THE EUROPEAN COMMUNITY, Feb. 7, 1992, arts. 75, 77, 90 O.J. (C 224) 1 (1992), [1992] 1 C.M.L.R. 573 (1992) [hereinafter EC TREATY].

<sup>218</sup> See EEC TREATY arts. 3(e), 74-75. Other articles provide the necessary provisions. See *id.* arts. 61, 75-84. Trans-European networks are also specifically mentioned. See *id.* arts. 129 b-129 d.

Despite such authority, progress in the area has been slow. There was virtual stagnation until 1985, when the Court of Justice upheld part of an action brought by the European Parliament against the Council of Ministers for a failure by the Ministers to provide international transport services. See *EU Transport Policy*, *supra* note 155. There has been progress ever since the 1985 decision, but the activity must be heightened if the EU wishes to meet its common market goals.

<sup>219</sup> Resolution on the Green Paper, *supra* note 117.

<sup>220</sup> See *id.*

<sup>221</sup> See *EU Transport Policy*, *supra* note 155. There are three main legislative/executive bodies within the Union. The Commission initiates all proposals for legislation, manages EU spending, and acts as a catalyst for raising funds.

creating guidelines, researching and developing technical solutions, and financing or helping to raise national funds.<sup>222</sup>

#### 4.4. *Possible Obstacles to a Uniform Congestion Management Policy*

As discussed in Section 3.1. of this Comment, implementation of a suitable program may be hindered by the large number of territorial jurisdictions that must be included. The fact that many countries leave transport policy to numerous regional and local authorities multiplies the negative effects.<sup>223</sup> The absence of a single authority<sup>224</sup> hinders the production of a comprehensive and effective program. Since "rational transport operation demands [that] responsibility . . . be exercised at [a] network rather than [a] territorial level,"<sup>225</sup> ideally the EU should eliminate, consolidate, or define the roles of the local authorities in order to succeed.

This solution, however, conflicts with the principle of "subsidiarity" which underlies the European Union. Subsidiarity "means that each territorial level of authority acts within the limits of the powers conferred upon it and the objectives assigned to it."<sup>226</sup> There is a constant demand made by regions that this principle be observed. Subsidiarity is critical because "it embodies the competence which these authorities derive from their electoral

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The Council of Ministers adopts decisions by a qualified majority, but the Commission has veto power. The European Parliament works with the Council of Ministers. The Parliament may amend proposals, but the Council has veto power. The Parliament's role is largely informational. However, for many provisions regarding trans-European networking, a co-decision procedure between the Parliament and the Commission is used. See generally BERMANN ET AL., *supra* note 179.

<sup>222</sup> See *EU Transport Policy*, *supra* note 155; see also discussion *infra* Section 5.

<sup>223</sup> In London, 33 boroughs have decisive power over road improvement. In France, different roads in a zone may fall under state, department, or communal control. See CONGESTION CONTROL, *supra* note 4, at 87; see also HART, *supra* note 8, at 25-26 (noting that although London's traffic problem was evident for many years, no single organization existed to solve it).

<sup>224</sup> See CONGESTION CONTROL, *supra* note 4, at 88 ("[A]s a rule no agency has the task of tackling congestion as a whole and therefore no agency is in a position to deal with it effectively.").

<sup>225</sup> *Id.*

<sup>226</sup> Spatial Planning in Europe, *supra* note 154, § 1.6; see also Albert Breton et al., *Decentralization and Subsidiarity: Toward a Theoretical Reconciliation*, 19 U. PA. J. INT'L ECON. L. 21 (discussing the subsidiarity conundrum).

mandate . . . ."<sup>227</sup> The EU must be careful not to upset the delicate balance underlying its own mandate and the mandate given to these authorities.<sup>228</sup>

Even assuming that the EU possesses the requisite authority, instituting large-scale regulations generally faces other barriers. Currently, most democracies are experiencing a general withdrawal of state intervention and regulation, which reflects the public's social preferences.<sup>229</sup> Failure to communicate with the public may hinder any policy aimed at traffic congestion reform, but traffic information systems, which require public interaction, will be most severely impacted.<sup>230</sup> There are both real and psychological obstacles which prevent the proposal and effectiveness of many policies, specifically those attempting to enforce internalization.<sup>231</sup> The real obstacles include practical problems such as high transaction costs<sup>232</sup> and the difficulty of designing systems which will only minimally infringe upon the privacy of individuals.<sup>233</sup> The EU faces additional problems including classification

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<sup>227</sup> Spatial Planning in Europe, *supra* note 154, § 1.6.2.

<sup>228</sup> Another problem faced by the EU, as with any complex plan involving multiple actors, is the collective action problem. Analysts enumerate three theories that may cause actors not to join a uniform cause. The first is interest based; self-interested parties must calculate that the benefits of coordination outweigh its costs, and they may be unwilling to do so. The second theory is based upon knowledge; a consensus regarding the causal relations of the problem must exist. A third consideration is power based; there must be adequate resolution of the smaller nations' concerns about equity in the partnership. See Ileana M. Porras, Book Review, 90 AM. J. INT'L L. 703, 704-05 (reviewing KAREN T. LITFIN, OZONE DISCOURSES: SCIENCE AND POLITICS IN GLOBAL ENVIRONMENTAL COOPERATION (1995) and IAN H. ROWLANDS, THE POLITICS OF GLOBAL ATMOSPHERIC CHANGE (1995)).

<sup>229</sup> See Button, *supra* note 40, at 21.

<sup>230</sup> Existing systems have difficulty meeting the needs for interaction. See CONGESTION CONTROL, *supra* note 4, at 88-89.

<sup>231</sup> See Button, *supra* note 40, at 21.

<sup>232</sup> See *id.* at 22; see also Quinet, *supra* note 43, at 62 (noting that regulations do not lead to optimal solutions at the lowest costs and require costly policing); Rothengatter, *supra* note 93, at 129-30 (listing transaction costs including: preparation, planning, equipment, information and advertising, and enforcement).

<sup>233</sup> See Button, *supra* note 40, at 22; see also Alpert, *supra* note 124, at 97-98.

problems,<sup>234</sup> principal-agent problems,<sup>235</sup> inflexibility,<sup>236</sup> and misuse.<sup>237</sup> Psychological obstacles include overturning the public perception of an asymmetry between the costs of regulation and its intangible benefits.<sup>238</sup> The costs of regulated internalization will be very high, especially because individuals are not accustomed to paying for use of the roads. It will be difficult to convince the public that these payments, along with the additional administrative costs, are in their best interests because the measures will reduce traffic congestion and thus help the economy. Regulation also requires that regulators develop a long-term plan. Unfortunately, there is little incentive for a legislator to look at the applications of a policy beyond his or her term of office.<sup>239</sup> The EU must avoid the tendency of administrators to "respond to public concern by instituting measures which [merely] appear to address the problem, even though there may be doubt[s] as to their effectiveness."<sup>240</sup>

These problems, which address the central tenets of congestion management policies, can be overcome with a clear transport

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<sup>234</sup> The problem of classification is to define which classes or zones should be targeted. See Rothengatter, *supra* note 93, at 130-31.

<sup>235</sup> The principal-agent problem, with regard to road pricing in particular, "can be roughly defined as the process of establishing a system of payments, information flows and control mechanisms to ensure that the professional managers fulfil[sic] the objectives of the capital owners, while still making a profit for themselves." *Id.* at 131.

<sup>236</sup> Regulations are often too rigid to allow for individual exceptions to a general rule. See *id.* at 118.

<sup>237</sup> Regulation can encourage people to expend energy and intelligence to circumvent the rules, can be used as a national policy to protect the home market from competition, and may not create enough incentives to promote innovation or dynamic efficiency. See *id.*; see also Quinet, *supra* note 43, at 62 (describing problems of conversion for personal benefit and other unintended side-effects of regulation).

<sup>238</sup> See Button, *supra* note 40, at 22. This is made particularly difficult by interest groups which may expend substantial amounts of money to block reform if they perceive any kind of threat.

<sup>239</sup> See CONGESTION CONTROL, *supra* note 4, at 89. See generally ROBERT A. DAHL, MODERN POLITICAL ANALYSIS 101-02 (2d ed. 1970) (illuminating the factors generally considered when developing a broad policy, such as the following: (1) alternatives available; (2) likely consequences of each alternative; (3) value to the individual of each set of consequences; (4) estimation of the relative probability of the consequences; and (5) one's attitude toward risk aversion).

<sup>240</sup> CONGESTION CONTROL, *supra* note 4, at 90.

policy.<sup>241</sup> Currently, at the international level, there is a "lack of precise political objectives," which is a "severe handicap to the introduction of coherent programmes."<sup>242</sup> Unclear transport policies are at the source of many traffic congestion problems; this conclusion provides a good reason to develop a standardized international approach to traffic to overcome the coordination problems that exist.<sup>243</sup> Without cooperation among nations and a national authority, problems are multiplied and incentives are created for countries to act against the best interests of the Union. As a result, the EU will need to increase its role in the effort to clarify policy.

#### 4.5. *Conclusions on an International Traffic Plan*

The patchwork of national plans across Europe does not work. To increase efficiency, countries must develop an international plan. This plan would help integrate the European Common Market, particularly urban areas, and generally benefit all nations. It would provide a better method for determining the most effective solutions, avoid conflicts among nations, integrate administrative and regulatory approaches to ITS and road pricing solutions, and help pay for the expected high costs of congestion management. Some regional involvement must exist in recognition of the importance of the principle of subsidiarity, but an internationally-developed plan, overseen by the EU, would be the most effective approach. Some obstacles exist which may hinder greater regulation, particularly at the international level, but the current system does not work. The huge costs and rapidly increasing amounts of traffic, both domestic and international, demand extreme measures. Extreme measures rely upon international involvement. International involvement is feasible and required.

### 5. THE ROLE OF THE EUROPEAN UNION IN CONGESTION MANAGEMENT

A coherent international congestion policy offers numerous advantages, and the EU, clearly, should have a role in implementing such a policy. Neil Kinnock, the EU Head Minister of

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<sup>241</sup> See *id.* at 94.

<sup>242</sup> *Id.*

<sup>243</sup> See *id.* at 92-93.



Transport, has agreed that the EU must play such a role by stating that, "[N]ational and local government, public and private finance and industry and *the European Union itself* must be employed in the task of achieving 'sustainable mobility' . . . ." <sup>244</sup> The scope and definition of the EU's role are still unclear, but many aspects of congestion management would benefit from broader administration at the trans-national level. The primary role of the EU should be to promote integrated planning. This will have two benefits: (1) it will prevent pointless, cost-intensive, parallel investment, and (2) it could also reduce the negative effects one nation, region, or locality has upon the trans-European network and international traffic flow. <sup>245</sup> The Union should direct its role toward fostering a trans-European network in accordance with its goals of integrating the market and promoting cohesion. <sup>246</sup> The EU must be mindful of its role and the role of regional communities. "[A]ction by the Community to establish guidelines is necessary[,] in accordance with the principle of subsidiarity[,] . . . to establish the broad lines and the priorities of the Community action proposed in the field of trans-European transport networks." <sup>247</sup>

While Kinnock urges that the main tasks should be facilitating, enabling, and encouraging improvement <sup>248</sup>—all noble and proper goals—they are not enough. <sup>249</sup> The EU role must also include financing, research, and development. The Union has at least two tasks in this respect: (1) reducing financial administrative risks involved, and (2) encouraging private investment to take

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<sup>244</sup> See Kinnock, *supra* note 17 (emphasis added); see also *infra* note 87 (defining "sustainable mobility").

<sup>245</sup> See Resolution on the Green Paper, *supra* note 117, at 29-30.

<sup>246</sup> The EU Commission has defined the scope of such a network to include the following: (1) transport infrastructure, traffic management systems, and positioning and navigation systems; (2) road, rail, and inland waterway networks and seaports; and (3) technical installations to ensure harmonious operation of the network and efficient traffic management. See Council Decision 1692/96, art. 3, 1996 O.J. (L 228) 1.

<sup>247</sup> *Id.* pmbl. § 6.

<sup>248</sup> In addition, the Minister states that many of the actions necessary "must obviously and rightly" be taken at the national, regional, or local level. See Kinnock, *supra* note 17.

<sup>249</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 2-3. But see Daniel John, *Road Jams Not EC at Issue, Says Minister*, THE GUARDIAN (London), July 28, 1992, Home Section, at 4 (recounting statements made by John MacGregor, Transport Secretary of Britain, that Britain will "ignore any attempt by the European Community to block its road building programme on the grounds that solving congestion is a national issue, not a community problem.").

a greater part in projects of European interest.<sup>250</sup> These projects should focus on an integrated, smartly-managed network. Because of the high costs associated with this proposal and the nature of all citizens as transport consumers, it is necessary for the EU to encourage involvement by the private sector.<sup>251</sup> The EU must play an important role<sup>252</sup> in selecting projects to ease the traffic congestion burden.

### 5.1. *EU Role in Congestion Pricing and Internalization Measures*

Since eliminating external costs is increasingly important in today's climate, and there are huge external costs associated with traffic congestion,<sup>253</sup> it makes sense that the EU should greatly expand its role in this area. The effectiveness of such a policy may depend on international oversight. The external costs to the Union as a whole totaled ECU 250 billion in 1991, and 90% of these costs have been attributed to road transport.<sup>254</sup> In order to achieve a trans-European network, road pricing *must be* considered appropriate.<sup>255</sup> As noted in Section 2.3.1. of this Comment, most traffic costs can be attributed to the failure to internalize costs. Without forcing internalization by road pricing, a veiled subsidy will continue to exist and will give little incentive for individuals or businesses to change their approaches to transit.

The EU is the best organ for examining the range of external costs. An international body should collect and compare the various territory's and region's data in order to ensure fair, efficient, accurate and tolerable pricing.<sup>256</sup> Tolerability is particularly important, because consumers will most likely be displeased with

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<sup>250</sup> See *Development Theme II*, *supra* note 184 § 3; see also *supra* Section 4.2.4.

<sup>251</sup> See Resolution on the Green Paper, *supra* note 117, at 36.

<sup>252</sup> Included in this role is that the EU base its selection upon (1) community interest; (2) evaluation of the risks in seeking private investment; (3) priority for short notice projects; (4) economic importance or job creation; and (5) satisfaction of environmental impact scrutiny. See *Development Theme II*, *supra* note 184, § 3.

<sup>253</sup> See discussion *supra* Section 2.3.1.

<sup>254</sup> See Opinion of the Committee of the Regions on the Green Paper: Towards Fair and Efficient Pricing in Transport—Policy Options for Internalizing the External Costs of Transport in the European Union, 1997 O.J. (C 116) 58, 59 [hereinafter Opinion on the Green Paper].

<sup>255</sup> See Resolution on the Green Paper, *supra* note 117, at 15.

<sup>256</sup> See Opinion on the Green Paper, *supra* note 254, at 59.

an end to the subsidy of congestion. By creating uniformity across the market, a country's own citizens as well as international travelers will have fewer reasons to gripe. As Kinnock notes, uniformity will ensure greater fairness, since effective road pricing must differentiate between types of vehicle, and times and places of travel.<sup>257</sup>

The EU plays a crucial role in ensuring that the systems are compatible.<sup>258</sup> This will buttress the EU's strategy to "promote more efficient transport systems by creating a market where prices and direct regulatory measures are designed to help make transport systems fairer, more balanced and more rational, with the aim of ensuring sustainable transport development."<sup>259</sup> A variety of different tax systems in the member states will create distortions in the competition between companies within the EU and will hinder the common market.<sup>260</sup> Although the EU does not yet have "persuasive evidence that the overall approach to solving transport problems via market prices and internalizing external costs will definitely relieve congestion in the European Union transport system,"<sup>261</sup> the Union cannot lose sight of the fact that congestion management includes many aspects beyond road pricing. There must be greater support for multimodal transport as well as technological solutions which go hand-in-hand with road pricing.

## 5.2. *EU Role in Helping to Develop Telematics Solutions*

Technological solutions are costly, in large part due to their experimental nature.<sup>262</sup> However, the results are extremely prom-

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<sup>257</sup> See Resolution on the Green Paper, *supra* note 117, at 3.

<sup>258</sup> A harmonization of taxes and charges will enable the market to function smoothly. See Opinion on the Green Paper, *supra* note 254, at 59.

<sup>259</sup> *Id.* at 58.

<sup>260</sup> In many cases, the flow of traffic is hampered by restrictive regional policy measures. It is fine for regional planning to determine demand and needs, but the overall objectives must be determined at the EU level. See *id.* at 59.

<sup>261</sup> *Id.*

<sup>262</sup> Current estimates for the costs of implementation of some intelligent systems in 43 million cars could run as high as \$4.6 billion in collision avoidance and \$8.4 billion in in-car navigation. The costs of an integrated system are not yet estimated. However, Dr. Nick Evans, Director of Stanford Research Institute International, a global ITS proponent, estimates costs will be 95% lower than the costs for building and infrastructure. See *Intelligent Systems, supra* note 122, at 7.

ising.<sup>263</sup> Technology plays a crucial role in automatic tolls, parking and congestion pricing, as well as information systems.<sup>264</sup> The investment required to equip Europe with the necessary technology will be sizable, but so will its positive impact.<sup>265</sup> The necessary investment should come from funds raised and contributed by the EU. By merely drawing attention to its current projects and emphasizing its promise, the EU lends credibility to them and may attract the necessary funding.<sup>266</sup>

To a large extent, though, due to contributions of private companies,<sup>267</sup> the technology is now available. Currently, the primary obstacle is determining the best way to integrate the system.<sup>268</sup> The only way a system can flourish is with government cooperation.<sup>269</sup> The only way a *European* system could flourish is with EU cooperation, because of the unique nature of its international traffic flow and desire for a common market.<sup>270</sup> The EU's involvement is vital because there is a need for political clarification as to which system will be pursued to enable further research

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<sup>263</sup> "Looking at the current [research and development] programmes concerning advanced technologies, . . . one could get the impression that the future of congestion control and demand management has just begun." CONGESTION CONTROL, *supra* note 4, at 123-24.

<sup>264</sup> See *id.* at 125. See generally Robert Bond, *UK: Traffic Management - Monitoring Towards the Millennium*, REUTER TEXTLINE SURVEYOR, Jan. 16, 1997, available in LEXIS.

<sup>265</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 65.

<sup>266</sup> See Resolution on the Green Paper, *supra* note 117, at 7.

<sup>267</sup> This includes many car companies which have an impact upon the European and American economy, such as Ford and BMW. Other consortia of public institutions and industry groups exist in Palo Alto, Brussels, Washington, Detroit, and Tokyo. See *Intelligent Systems*, *supra* note 122, at 7. It also includes the new and expanding industry of traffic management systems companies. One such company, Peek, has developed a system for deducting tolls automatically at pay booths, thus making it unnecessary for drivers to stop. See Thapar, *supra* note 25, at 11.

<sup>268</sup> See *Intelligent Systems*, *supra* note 122, at 7. It is critical that the system is widely available in order to transform the efficiency of individual journeys. See *id.* See generally Alpert, *supra* note 124.

<sup>269</sup> See *Intelligent Systems*, *supra* note 122, at 7 ("It requires primarily a commitment from government to direct and fund the creation of the infrastructure on which 'intelligent' cars and commercial vehicles should be able to travel much more efficiently within the next few decades.")

<sup>270</sup> The incentive for the EU is clear. The OECD estimates that road traffic congestion in the EU costs more than 100 billion ECU/year. Two percent of the EU GDP is wasted in man-hours, fuel costs, and other charges. See *id.*

and to focus current projects.<sup>271</sup> The EU has a role to play, as with all congestion management techniques, in telematics: minimizing unnecessary duplication of research.<sup>272</sup> Also, it may be necessary to set aside broad strips of land to create at least a modicum of flexibility for the use of the systems beyond 2000.<sup>273</sup>

The current congestion notification systems are widely diverse and beg for standardization, especially when tourism or international traffic concerns are considered.<sup>274</sup> "[T]he full potential of road transport telematics will only be realized at the European level, if the systems... achieve an appropriate level of interoperability and ensure continuity of services to the user."<sup>275</sup> Without ensuring the cohesion of advanced high speed networks into regions, there is some risk of a dichotomy whereby it would take longer to go to nearby areas than it would between major centers.<sup>276</sup> In this manner, the EU would need to work closely with national and regional authorities to ensure compatibility.

### 5.3. *EU Role in Other Aspects of Congestion Management*

The EU has an important role to play in all other aspects of congestion management, like those described in Section 3.2.1.3. of this Comment, and these deserve to be mentioned. Foremost, the EU has the ability to aid in formulating regulatory measures. These measures would cover land use, urban planning, and employment practices. Inter-urban and urban-to-suburban travel is out of control in large part due to land use policies that separate jobs, recreation, and living areas.<sup>277</sup> The EU has already noted the

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<sup>271</sup> See TRANS-EUROPEAN NETWORKS, *supra* note 2, at 86.

<sup>272</sup> See CONGESTION CONTROL, *supra* note 4, at 127.

<sup>273</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 88.

<sup>274</sup> See Resolution on the Green Paper, *supra* note 117, at 8. The Resolution asks for standardization bodies to help define technical standards, within a framework of Member States investigating, proposing and experimenting, to determine the best solution to take across the EU.

<sup>275</sup> Council Resolution of 17 June 1997 on the *Development of Telematics in Road Transport, in Particular with Respect to Electronic Fee Collection*, 1997 O.J. (C 194) 5.

<sup>276</sup> See EUROPEAN TRANSPORT, *supra* note 1, at 89.

<sup>277</sup> See CONGESTION CONTROL, *supra* note 4, at 26. The United States is in dire straits in this respect. See Dorschner, *supra* note 75 (detailing the state of Florida's planning nightmare due to bedroom communities around Miami). But cf. Carol Jouzaitis, *39 Million People Work, Live Outside City Centers*, USA TODAY, Nov. 4, 1997, 1A (noting that more and more people are now living and working outside of cities—wreaking even greater havoc on planning).

importance of creating districts which include home, shopping, and work areas in close proximity to each other, in order to reduce the potential for creating massive commuter jams.<sup>278</sup> If the EU does not have some guidelines and integration among nations and regions, these regions could simply shift the congestion to another area or put the burden on another group besides commuters, such as international travelers, who are often overlooked. The EU should play a role in looking out for all drivers' interests. Also, the EU could play a key role in examining alternate work schedules and integrating and assuring uniformity in telecommuting alternatives.

Urban planning also involves locating public transport near homes and workplaces.<sup>279</sup> This relies on an efficient public transport network. Linking the various networks and making sure they are compatible is beneficial for international travel and also for the Union as it strengthens the economy.<sup>280</sup> The integration is first a national government responsibility and afterwards an EU responsibility. The EU can play a role in selecting research and development projects that also may aid the promotion of public transport.<sup>281</sup> These projects would include ventures with private business that could be profitable and excellent for the health of the common market. Aims and goals should include better information, ease of use (especially for international travelers), comfort, cost-effectiveness, and speed. It is hard to imagine that the EU could not, by sheer encouragement, positively impact multi-modal public transport.

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Europe is facing this problem to a lesser extent than America, due to general land policies and availability of space. See CONGESTION CONTROL, *supra* note 4, at 20.

<sup>278</sup> See Resolution on the Commission Green Paper, *supra* note 117, at 7 (making a call for guidelines set forth by the EU); see also Underhill, *supra* note 12, at 35-36.

<sup>279</sup> See CONGESTION CONTROL, *supra* note 4, at 20; see also Underhill, *supra* note 12, at 35-36.

<sup>280</sup> See Kinnock, *supra* note 17; see also Resolution on the Green Paper, *supra* note 117.

<sup>281</sup> The Commission cautions, however, that 75% of all trips are currently made by car. See Resolution on the Green Paper, *supra* note 117, at 7. Therefore, promotion is necessary, as success is not yet assured. See *id.*

#### 5.4. *Conclusions on the EU Role*

The EU can play a major role in many aspects of congestion management. The EU is critical to integrating and developing a plan of road pricing. Road pricing is essential to ending the underlying “subsidy” of traffic congestion in Europe and will function most effectively on an international scale. EU involvement will also eliminate anti-competitive side effects of national road-pricing policies. The EU can also help fund research and development of ITS solutions, which will require public and private funding and cooperation in order to ensure success. In addition, standardization of public transit and regulatory and administrative measures such as land use zoning, urban planning, and alternate work schedules, will ensure optimal efficiency, eliminate unnecessarily duplicative spending, and avoid conflicts between competing national plans within EU nations.

### 6. CONCLUSION

Congestion is an undeniable problem in the EU; it affects local trips and international travelers. The commonly suggested approach of building more infrastructure has been shown to do more to hinder resolution of the problem than to help it, and the costs of congestion continue to escalate astronomically. The current approach to transport policy and congestion management does not sufficiently guarantee relief from congestion. The EU should examine a more integrated approach, one that considers all alternatives. In order to simplify this examination, comparisons of the various approaches already in use throughout Europe’s cities and regions should be aided by EU involvement in the enterprise.

The approach must consider a number of options, including public transit, urban planning, administrative regulation, congestion-pricing, and ITS. The EU has a role to play in each of these solutions, and each solution’s effectiveness will be hindered without involvement at the EU level. The EU will surely benefit from increased trans-national involvement as it attempts to reach its stated goals of a trans-European network and a common market. The EU must clearly state its plan of congestion management and take an active role, if it wishes to achieve an efficient, profitable system.

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